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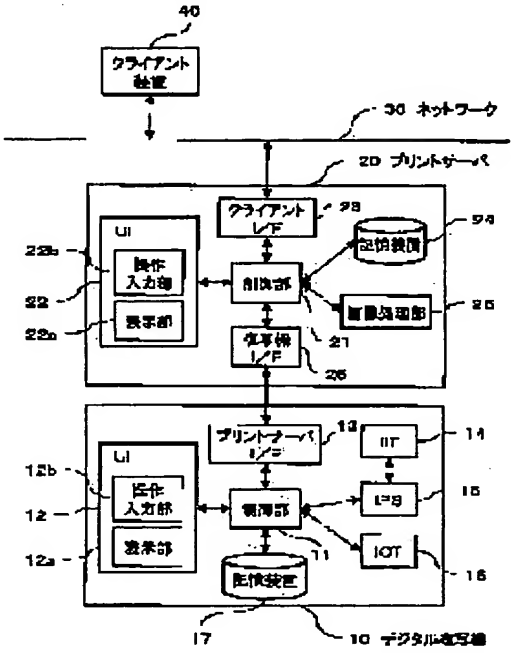
(54) PRINTING SYSTEM AND JOB MANAGEMENT METHOD THEREFOR

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a mechanism for grasping at once conditions of a copy job and a print job in a printing system having an image forming apparatus for a printing means such as digital copy apparatus capable of executing a copying operation for copying a manuscript such as a paper and a printing operation of electronic printing data.

SOLUTION: A copy job is directly inputted to a digital copy machine 10. A print job generated by a client device 40 is managed by a print server 20. The print server 20 converts the print job to one in a data type which can be printed by the digital copy machine 10 supplies it to the digital copy machine 10. A control section 11 has management information of the copy job held by the digital copy machine 10. A control section 21 has management information of the print job held by the print server 20. A total job management section that integrates and displays the management information of the copy job and print job held by both of the control sections 11, 21 is provided to the control section 11 and/or control section 21.



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(57)【要約】
【課題】 紙等の原稿を複写する処理と電子的な印刷データの印刷処理との両方が可能なデジタル複写機等の画像形成装置を印刷手段として有する印刷システムにおいて、複写ジョブと印刷ジョブの状況を一度に把握するための機構を提供する。
【解決手段】 複写ジョブは、デジタル複写機１０に直接入力される。クライアント装置４０から発せられた印刷ジョブは、プリントサーバ２０で管理される。プリントサーバ２０は、印刷ジョブをデジタル複写機１０が印刷可能なデータ形式に変換してデジタル複写機１０に供給する。制御部１１は、デジタル複写機１０が保持している複写ジョブの管理情報を有している。制御部２１は、プリントサーバ２０が保持している印刷ジョブの管理情報を保持している。この制御部１１及び／又は２１に、双方がそれぞれ保持している複写ジョブの管理情報と印刷ジョブの管理情報を集約して表示する統合ジョブ管理部を設ける。

【特許請求の範囲】
【請求項１】 電子的なイメージデータを用紙に印刷する印刷システムであって、原稿を光学的に読み取って得たイメージデータを用紙に印刷する複写機能と、通信線を介して入力されたイメージデータを用紙に印刷する印刷機能とを有するとともに、前記複写機能において読み取った原稿のイメージデータ群を複写ジョブとして蓄積し、蓄積した複写ジョブについて処理順序を含む管理情報を生成し、蓄積した複写ジョブを前記管理情報に基づき順に印刷処理する画像形成装置と、クライアント装置から与えられた印刷ジョブを蓄積し、蓄積した印刷ジョブについて処理順序を含む管理情報を生成し、蓄積した印刷ジョブを前記管理情報に基づき順にイメージデータに展開し、前記通信線を介して前記画像形成装置に入力して印刷させる印刷制御装置と、前記画像形成装置が有する複写ジョブの管理情報と前記印刷制御装置が有する印刷ジョブの管理情報とを集約して、前記画像形成装置で印刷される複写ジョブ及び印刷ジョブの統合ジョブ管理情報を生成するジョブ情報集約手段と、前記ジョブ情報集約手段で生成された統合ジョブ管理情報に基づき、複写ジョブ及び印刷ジョブの管理情報を一覧表示するジョブ情報表示手段と、を有する印刷システム。
【請求項２】 請求項１に記載の印刷システムにおいて、前記ジョブ情報集約手段は、集約した複写ジョブの管理情報及び印刷ジョブの管理情報に基づき、それら各ジョブについて前記画像形成装置における印刷処理順序に関するステータスを決定し、決定した各ジョブのステータスを前記統合ジョブ管理情報に保持し、前記ジョブ情報表示手段は、前記ジョブ情報集約手段で決定された各ジョブの前記ステータスに基づき、前記一覧表示において各ジョブの前記画像形成装置における処理順序が識別可能な表示形態で表示を行うことを特徴とする印刷システム。

【請求項３】 請求項２記載の印刷システムにおいて、前記画像形成装置は、複写ジョブ及び印刷ジョブ間での処理順序の優先関係に関する複数種類のモードを有するとともに、設定されたモードの種類を記憶し、前記ジョブ情報集約手段は、設定されているモードの種類の情報を前記画像形成装置から取得し、これに応じて各ジョブの前記画像形成装置における処理順序に関する前記ステータスを決定することを特徴とする印刷システム。

【請求項４】 請求項１から請求項３までのいずれかに記載の印刷システムにおいて、前記ジョブ情報集約手段は、各ジョブが複写ジョブ又は印刷ジョブのいずれの種類であるかを示すジョブ種類識別情報を前記統合ジョブ管理情報に保持し、前記ジョブ情報表示手段は、複写ジョブ及び印刷ジョブの管理情報の一覧表示に当たり、前記ジョブ種類識別情報に基づきそれら各ジョブの種類が識別可能な表示を行うことを特徴とする印刷システム。

【請求項５】 請求項１から請求項４までのいずれかに記載の印刷システムにおいて、さらに、前記ジョブ情報表示手段によるジョブの管理情報の一覧表示と連動して、ジョブの処理順序に関する操作指示の入力を受け付けるジョブ操作入力手段と、前記ジョブ操作入力手段から入力された操作指示を前記画像形成装置及び／又は前記印刷制御装置が有する複写ジョブ及び／又は印刷ジョブの管理情報に反映させるジョブ操作反映手段と、を有することを特徴とする印刷システム。

【請求項６】 請求項５記載の印刷システムにおいて、前記ジョブ情報表示手段は、各ジョブごとに、そのジョブを印刷するための所要時間を推測するための参考となるジョブのサイズ情報を表示することを特徴とする印刷システム。

【請求項７】 請求項１から請求項６までのいずれかに記載の印刷システムにおいて、前記ジョブ情報集約手段で生成した統合ジョブ管理情報をクライアント装置に送信する手段を有することを特徴とする印刷システム。

【請求項８】 請求項７に記載の印刷システムにおいて、送信した前記統合ジョブ管理情報に含まれるジョブに対するクライアント装置からの操作指示を受信し、この操作指示を前記画像形成装置及び／又は前記印刷制御装置が有する複写ジョブ及び／又は印刷ジョブの管理情報に反映させる手段を有することを特徴とする印刷システム。

【請求項９】 原稿を光学的に読み取って得たイメージデータを用紙に印刷する複写機能と、通信線を介して入力されたイメージデータを用紙に印刷する印刷機能とを有するとともに、前記複写機能において読み取った原稿のイメージデータ群を複写ジョブとして蓄積し、蓄積した複写ジョブについて処理順序を含む管理情報を生成し、蓄積した複写ジョブを前記管理情報に基づき順に印刷処理する画像形成装置と、クライアント装置から与えられた印刷ジョブを蓄積し、蓄積した印刷ジョブについて処理順序を含む管理情報を生成し、蓄積した印刷ジョブを前記管理情報に基づき順にイメージデータに展開し、前記通信線を介して前記画像形成装置に入力して印刷させる印刷制御装置と、を含む印刷システムにおけるジョブ管理方法であって、前記画像形成装置が有する複写ジョブの管理情報と前記印刷制御装置が有する印刷ジョブの管理情報とを集約して、前記画像形成装置で印刷される複写

ジョブ及び印刷ジョブの統合ジョブ管理情報を生成するジョブ情報集約ステップと、前記ジョブ情報集約手段で生成された統合ジョブ管理情報に基づき、複写ジョブ及び印刷ジョブの管理情報を一覧表示するジョブ情報表示ステップと、を含むジョブ管理方法。

【請求項１０】 原稿を光学的に読み取って得たイメージデータを用紙に印刷する複写機能と、通信線を介して入力されたイメージデータを用紙に印刷する印刷機能とを有するとともに、前記複写機能において読み取った原稿のイメージデータ群を複写ジョブとして蓄積し、蓄積した複写ジョブについて処理順序を含む管理情報を生成し、蓄積した複写ジョブを前記管理情報に基づき順に印刷処理する画像形成装置と、クライアント装置から与えられた印刷ジョブを蓄積し、蓄積した印刷ジョブについて処理順序を含む管理情報を生成し、蓄積した印刷ジョブを前記管理情報に基づき順にイメージデータに展開し、前記通信線を介して前記画像形成装置に入力して印刷させる印刷制御装置と、を含む印刷システムに含まれるコンピュータに、前記画像形成装置が有する複写ジョブの管理情報と前記印刷制御装置が有する印刷ジョブの管理情報とを集約して、前記画像形成装置で印刷される複写ジョブ及び印刷ジョブの統合ジョブ管理情報を生成するジョブ情報集約ステップと、前記ジョブ情報集約手段で生成された統合ジョブ管理情報に基づき、複写ジョブ及び印刷ジョブの管理情報を一覧表示するジョブ情報表示ステップと、を実行させるためのプログラムを記録したコンピュータ読取り可能な記録媒体。

【発明の詳細な説明】

【０００１】

【発明の属する技術分野】本発明は、電子的なイメージデータを用紙に印刷するための印刷システムに関し、特に印刷機能と複写機能の両方を有する画像形成装置を印刷手段として有する印刷システムに関する。

【０００２】

【従来の技術】デジタル複写機（あるいはデジタルカラー複写機）は、原稿のイメージを光学的に読み取ってデジタルのイメージデータを生成する読取り機構と、そのイメージデータを用紙に印刷する印刷機構との組合せと捉えることができる。実際、読取り機構と印刷機構とを別々に開発し、両者を組合せてデジタル複写機を構成するという開発手法が採られることも多い。読取り機構はＩＩＴ（Image Input Terminal）と、印刷機構はＩＯＴ（Image Output Terminal）と呼ばれることがある。

【０００３】デジタル複写機の印刷機構は、デジタルのイメージデータに基づき用紙の上に半永久的な画像を形成するという機能の上では、コンピュータの出力手段として用いられるプリンタと何ら変わるところはない。そこで、デジタル複写機をネットワーク等に接続し、プリントエンジンとして利用するという利用形態も生まれている。このような利用

形態では、例えば、図２５に示すようにデジタル複写機１０を印刷制御装置としてのプリントサーバ２０を介してＬＡＮ（ローカル・エリア・ネットワーク）などのネットワーク３０に接続される。プリントサーバ２０は、コンピュータなどのクライアント装置４０が出力した印刷ジョブを受け付けてスケジューリングするスプーラ機能と、印刷ジョブをデジタル複写機で処理可能なイメージデータの形に展開する画像化機能を有する。プリントサーバ２０が印刷ジョブを展開して得たイメージデータをデジタル複写機に供給すると、デジタル複写機はそのイメージデータを用紙に印刷する。

【０００４】１つの原稿を複写するために行う一連の処理を、印刷ジョブとの対比で複写ジョブと呼ぶ。プリンタとしても利用されるデジタル複写機は、印刷ジョブと複写ジョブのいずれを優先的に処理するかについてのモードを有する場合がある。例えば、特開平５－３０２６４号公報には、複写ジョブを優先するローカルモードと、印刷ジョブを優先するリモートモードの２種類のモードを有するデジタル複写機が示されている。このデジタル複写機は、ＥＳＳと呼ばれる印刷制御のためのモジュール（プリントサーバに相当）に接続されており、ローカルモードで動作中にＥＳＳから印刷ジョブの処理依頼が来ると、ＥＳＳに対してｂｕｓｙ状態を表す信号を返す。

【０００５】デジタル複写機の中には、ハードディスク等の大容量の記憶装置を内蔵するものがある。この種のデジタル複写機は、原稿を読み取って得たイメージデータをその記憶装置に蓄え、その記憶装置からイメージデータを読み出して印刷することができる。コピー部数が２部以上の場合、このデジタル複写機は、１部目の複写時に原稿の読取りを一度だけ行い、２部目以降は記憶装置に蓄えたイメージデータを読み出して印刷する。２部目以降を印刷している間は、デジタル複写機の印刷機構のみが動作し、読取り機構は休止している。この種のデジタル複写機の中には、そのような読取り機構の空き時間を利用して次の原稿の読取りのみを先に行うことができるものも多い。このようなデジタル複写機では、読み取った原稿各ページのイメージデータに対応づけて、操作パネルから入力されたコピー部数や拡大縮小率などの設定情報を記憶し、後でイメージデータを印刷する際にその設定情報を参照する。すなわち、このようなイメージデータと設定情報との組合せにより、複写ジョブの内容が規定される。

【０００６】

【発明が解決しようとする課題】一般にプリントサーバは、管理している印刷ジョブの状況などを表示し、印刷ジョブの取消や処理順序の入れ替えなどの操作を受け付けるＵＩ（ユーザインタフェース）を有している。一方、大容量記憶装置を有するデジタル複写機の中にも、管理している複写ジョブの状況などを表示し、ジョブの取消などの操作を受け付けるＵＩを有するものがある。従来、このようなプリントサーバ及びデジタル複写機から構成される印刷システムでは、印刷ジョブに関する情報はプリントサーバで、複写ジョブに関する情報はデジタル複写機で、それぞれ別々に管理されていた。このため、プリントサーバでは、デジタル複写機でどのような複写ジョブが処理又は蓄積されているかを知るこ

とができなかった。また同様に、デジタル複写機も、プリントサーバにどのような印刷ジョブがスプールされているか等の情報を知ることができなかった。

【０００７】したがって、ユーザは、デジタル複写機での印刷処理を待っている印刷ジョブや複写ジョブがどれだけあるかを知るには、プリントサーバとデジタル複写機の両方のＵＩ表示を見なければならなかった。図２５の構成は、デジタル複写機１０がプリントサーバ２０と直接ケーブル等で接続される構成であったが、デジタル複写機１０とプリントサーバ２０とをネットワークを介してリモートで接続するような構成も考えられる。このような構成をとった場合、ユーザは、離れた位置にあるデジタル複写機１０とプリントサーバ２０のＵＩ表示を一度に見ることはできなかった。

【０００８】本発明は、このような課題に鑑みなされたものであり、画像形成装置（デジタル複写機等）と印刷制御装置（プリントサーバ等）とを含む印刷システムにおいて、印刷ジョブと複写ジョブの状況を一度に把握するための機構を提供することを目的とする。

【０００９】

【課題を解決するための手段】上記目的を達成するため、本発明では、印刷システムに、画像形成装置が有する複写ジョブの管理情報と印刷制御装置が有する印刷ジョブの管理情報とを集約して、前記画像形成装置で印刷される複写ジョブ及び印刷ジョブの統合ジョブ管理情報を生成するジョブ情報集約手段と、前記ジョブ情報集約手段で生成された統合ジョブ管理情報に基づき、複写ジョブ及び印刷ジョブの管理情報を一覧表示するジョブ情報表示手段とを設けた。

【００１０】この構成において、画像形成装置は複写ジョブの管理情報を、印刷制御装置は印刷ジョブの管理情報を、それぞれ管理している。これら別々に管理されている情報をジョブ管理情報集約手段で集約することにより、複写ジョブ及び印刷ジョブの両方の管理情報を含んだ統合ジョブ管理情報が生成される。そして、ジョブ情報表示手段が、この統合ジョブ管理情報に基づき、複写ジョブ及び印刷ジョブの管理情報を一覧表示する。ユーザは、ジョブ情報表示手段の一覧表示により、その時点で画像形成装置に管理されている複写ジョブと印刷制御装置で管理されている印刷ジョブの状況を一度に知ることができる。

【００１１】上記ジョブ情報集約手段及びジョブ情報表示手段は、印刷制御装置と画像形成装置のいずれか一方に設けてもよいし、両方に設けてもよい。また、印刷制御装置、画像形成装置とは別に、ジョブ情報集約手段及びジョブ情報表示手段の機能を備えたコンピュータを設け、そのコンピュータを印刷制御装置及び画像形成装置に対しネットワーク等を介して接続する構成としてもよい。

【００１２】

【発明の実施の形態】以下、本発明の実施の形態（以下実施形態という）について、図面に基づいて説明する。

【００１３】１．全体構成図１は、本発明に係る印刷システムの全体的な構成を示す機能ブロック図である。図１において、印刷システムは、デジタル複写機１０とプリントサー

バ２０から構成されている。デジタル複写機１０は、複写機として機能すると共に、クライアント装置４０から出力された印刷ジョブを印刷する印刷装置としても機能する。以下、デジタル複写機１０及びプリントサーバ２０について詳細に説明する。

【００１４】デジタル複写機１０は、制御部１１、ＵＩ（ユーザインタフェース）１２、プリントサーバＩ／Ｆ（インタフェース）１３、ＩＩＴ（Image Input Terminal）１４、ＩＰＳ（Image Processing system）１５、ＩＯＴ（Image Output Terminal）１６、及び記憶装置１７を有している。制御部１１は、デジタル複写機１０全体の制御を行うためのモジュールである。ＵＩ１２は、デジタル複写機１０に対する操作の入力のためのユーザインタフェースであり、表示部１２ａと操作入力部１２ｂを含んでいる。表示部１２ａは、例えば液晶ディスプレイとして構成することができる。また、操作入力部１２ｂは、各種操作ボタンとして構成することができる。また、表示部１２ａと操作入力部１２ｂとをいわゆるタッチパネルとして一体的に構成することもできる。プリントサーバＩ／Ｆ１３は、プリントサーバ２０との通信のためのインタフェース・モジュールである。ＩＩＴ１４は、複写対象の原稿を光学的に読み取るための機構である。ＩＰＳ１５は、ＩＩＴ１４で獲得された原稿のイメージデータに対して色調補正やデータ圧縮などの処理を行うモジュールである。ＩＰＳ１５で圧縮されたイメージデータが、制御部１１の制御のもと、記憶装置１７に記憶される。印刷の際には、制御部１１が、記憶装置１７から圧縮イメージデータを取り出し、その圧縮イメージデータをＩＰＳ１５でデータ伸長した後、ＩＯＴ１６に供給する。ＩＯＴ１６は、受け取ったイメージデータを用紙に印刷する。記憶装置１７は、原稿のイメージデータ（圧縮されているとは言ってもデータサイズは無視できない）を多数蓄積する必要があるため、大容量であることが望ましい。コストを考えると、記憶装置１７としては、例えばハードディスク装置が好適である。

【００１５】デジタル複写機１０は、ＩＩＴ１４にて読み取った原稿各ページのイメージをいったん記憶装置１７に蓄えるとともに、その記憶装置１７から各イメージを読み出してＩＯＴ１６に供給する（すなわちＩＯＴ１６に印刷させる）。このような構成により、デジタル複写機１０は、ＩＩＴ１４による複写原稿の読み取りと、ＩＯＴ１６による印刷処理とを独立に実行することができる。

【００１６】さらにデジタル複写機１０は、複数の複写ジョブを保持し、管理することができる。すなわち、デジタル複写機１０は、例えばＡＤＦ（Auto Document Feeder：自動原稿送り装置）などによりＩＩＴ１４にまとめて入力されたページ群を一つの複写ジョブと認識し、画像データ群をジョブ単位で管理する。制御部１１は、記憶装置１７に記憶したイメージがそれぞれどの複写ジョブに対応するかを管理する。また、制御部１１は、それら各複写ジョブの入力の際に操作入力部１２ｂから入力された複写属性（用紙サイズ、部数、拡大・縮小率など）を、それら各ジョブに対応づけて管理する。制御部１１におけるジョブ管理は、基本的にＦＩＦＯ（先入れ先出し）である。すなわち、制御部１１は、入力された複写ジョブを順にキュー（待ち行列）に入れ、そのキューの先頭から順に複写

ジョブを取り出してＩＯＴ１６に印刷させる。
【００１７】また、デジタル複写機１０は、プリントサーバ２０を介してクライアント装置４０から印刷ジョブを受け取り、これをＩＯＴ１６にて印刷処理することができる。このように印刷ジョブを処理することに伴い、デジタル複写機１０では、複写ジョブと印刷ジョブの印刷処理の競合制御が必要となる。
【００１８】すなわち、クライアント装置４０からの印刷ジョブの投入も、デジタル複写機１０における複写ジョブの投入も、それぞれ任意のタイミングで行われる。そして、プリントサーバ２０は印刷ジョブを受け取ると即座にそれをデジタル複写機１０に印刷させようとする。このため、デジタル複写機１０に対して印刷ジョブと複写ジョブとがほぼ同時に到着する場合がある。このような場合、複写ジョブと印刷ジョブのいずれを先に処理するかを決定する必要がある。
【００１９】デジタル複写機１０には、このような競合制御のため複数のモードが規定されている。この競合制御は制御部１１によって実行される。この競合制御の内容については、後に詳しく説明する。
【００２０】プリントサーバ２０は、制御部２１、ＵＩ２２、クライアントＩ／Ｆ２３、記憶装置２４、画像処理部２５、及び複写機Ｉ／Ｆ２６を有している。制御部２１は、プリントサーバ２０全体の制御を行うためのモジュールである。ＵＩ２２は、プリントサーバ２０に対する操作の入力のためのユーザインタフェースであり、表示部２２ａと操作入力部２２ｂを含んでいる。例えば、表示部２２ａは液晶ディスプレイやＣＲＴとして構成することができ、操作入力部２２ｂは汎用のキーボードや専用の操作パネルなどとして構成することができる。クライアントＩ／Ｆ２３は、ネットワーク３０を介した通信のためのインタフェース・モジュールである。クライアント装置４０から出力された印刷ジョブは、ネットワーク３０を介し、このクライアントＩ／Ｆ２３からプリントサーバ２０に入力される。クライアント装置４０が発する印刷ジョブは、ラスターイメージであったり、ＰｏｓｔＳｃｒｉｐｔ（米国アドビシステムズ社の商標）やＰＤＦ／ＴＩＦＦ（米国アドビシステムズ社の商標）などのＰＤＬ（ページ記述言語）データであったりする。印刷ジョブがＰＤＬデータである場合は、このままではデジタル複写機１０のＩＯＴ１６で印刷できない。そこで、画像処理部２５が、ＰＤＬで記述された印刷ジョブを解釈し、デジタル複写機１０のＩＯＴ１６が処理できるイメージデータの形式に変換する。なお、本明細書では、「イメージデータ」とは、デジタル複写機１０のＩＯＴ１６が処理できるデータ形式を指すものとする。このようにして生成されたイメージデータは、記憶装置２４に蓄積され、印刷処理の順番が来るのを待つ。
【００２１】また、画像処理部２５は、イメージデータをデータ圧縮する機能を有する。印刷ジョブに圧縮保存の指示が含まれていれば、その印刷ジョブを構成するイメージデータは、画像処理部２５でデータ圧縮された後、記憶装置２４に記憶される。圧縮保存されたイメージデータは、デジタル複写機１０に送信する際には、画像処理部２５でデータ伸

長され、元のイメージデータに戻される。

【００２２】また、クライアント装置４０からプリントサーバ２０に対し、印刷対象の画像を表すデータの他に、印刷内容に関する指示が送られてくる場合がある。このような指示は、ＰＤＬの記述に含まれる場合もあるし、クライアント装置４０とプリントサーバ２０との間で規定されたプロトコルに従ったＰＤＬとは別のデータとして送られてくる場合もある。プリントサーバ２０は、このような印刷指示の内容を、デジタル複写機１０が理解できる形式に変換し、イメージデータと対応づけて記憶装置２４に記憶する。そして、記憶された印刷指示データは、印刷の順番が来ると、対応するイメージデータと共にデジタル複写機１０に送られる。デジタル複写機１０は、受け取った印刷指示データとイメージデータを順次ＩＯＴ１６に供給して印刷処理させる。

【００２３】ここで、クライアント装置４０から送られてくる印刷指示には、印刷方式に関する指示と、印刷対象のデータの属性情報とが含まれる。印刷方式に関する指示には、例えば、出力用紙のサイズや種類、給紙トレイや排紙トレイの指定、拡大／縮小の指定、後処理に関する指定（ステープル留めの位置や数、バインディング処理の有無など）が含まれる。なお、後処理に関する指定は、デジタル複写機１０が後処理（ステープル留めやパンチ穴開けなど）機能を有している場合にのみ可能である。また、データ属性情報には、例えば、印刷対象のデータのサイズや種類、カラー属性（カラーか白黒か）、そのデータの所有者名などが含まれる。

【００２４】なお、記憶装置２４は、クライアント装置４０から受信した印刷ジョブのデータをいったん蓄えたり、その印刷ジョブから生成したイメージデータを蓄えたりする必要があるため、大容量であることが望ましい。記憶装置２４としては、例えばハードディスクを用いることができる。複写機Ｉ／Ｆ２６は、デジタル複写機１０との通信のためのインタフェース・モジュールである。デジタル複写機１０とプリントサーバ２０とは、プリントサーバＩ／Ｆ１３と複写機Ｉ／Ｆ２６を介して互いに接続される。

【００２５】プリントサーバ２０は、クライアント装置４０からページ記述言語で記述された印刷ジョブを受け取ると、制御部２１の制御のもと、この印刷ジョブを画像処理部２５によりイメージデータに展開し、それらイメージデータを記憶装置２４に記憶する。制御部２１は、記憶装置２４に記憶した各イメージデータを印刷ジョブの識別子（ジョブ名など）と対応づけて管理する。そして、制御部２１は、各印刷ジョブの印刷順序についてスケジューリングを行い（基本的には入力順である）、その印刷順序に従って各印刷ジョブのイメージデータをデジタル複写機１０に出力する。すなわち、制御部２１は、入力された印刷ジョブを順にキューに入れ、そのキューの先頭から順に印刷ジョブを取り出してデジタル複写機１０に供給する。なお、プリントサーバ２０は、キュー内の印刷ジョブの順序をユーザの指示に応じて変更する機能を有している。この機能については後に詳細に説明する。

【００２６】２．基本的なジョブ管理次に、デジタル複写機１０の制御部１１とプリント

サーバ２０の制御部２１について詳細に説明する。

【００２７】図２は、デジタル複写機１０の制御部１１の詳細な構成を示す機能ブロック図である。図２に示すように、制御部１１は、複写ジョブ管理部１１０、モード管理部１１４、画像出力制御部１１６、及び統合ジョブ管理部１００、を含む。複写ジョブ管理部１１０は、複写ジョブのジョブ管理を行うモジュールである。複写ジョブ管理部１１０は、ＩＩＴ１４から複写ジョブが入力されると、その複写ジョブに対して識別子を割当て、その複写ジョブの各ページのイメージデータをその識別子に対応づけて管理する。この識別子のことを、ここではジョブ名と呼ぶ。また、複写ジョブ管理部１１０は、管理している複写ジョブについて、所定の管理情報（すなわち複写ジョブ管理情報１１２）を作成し、管理する。

【００２８】図３は、複写ジョブ管理情報１１２の内容の一例を示す図である。図示のように、複写ジョブ管理情報１１２としては、各複写ジョブごとに、ジョブ名、ステータス、オーナー、サイズ、頁数、及び部数が登録される。例えば「ステータス」は、そのジョブの現在の状態、すなわちそのジョブが印刷中であるか、あるいはこれから何番目に印刷されるかなどの状態を示す情報である。この例におけるステータス“ｗａｉｔ”は、そのジョブ（“ｃｏｐｙ２３”）が印刷処理待ち状態であることを示している。なお、ステータスに処理順序が登録されている場合は、ジョブはそのステータスに示された処理順序に従って印刷処理される。また、「オーナー」は、そのジョブの所有者の識別名を示している。複写ジョブの場合、オーナーの情報は、例えば複写機の課金管理のためのＩＤカードリーダから得ることができる。「サイズ」はそのジョブのイメージデータのサイズ（バイト単位）、「頁数」はそのジョブの文書の頁数、「部数」はそのジョブの文書の印刷部数を示している。

【００２９】図２に戻り、モード管理部１１４は、印刷ジョブと複写ジョブの競合制御に関するモードを管理するモジュールである。モード管理部１１４は、ユーザあるいはシステム管理者からモードの設定を受け付け、設定されたモードの値を記憶する。なお、モードの設定値は、デジタル複写機１０のメインメモリ上に記憶してもよいし、デジタル複写機１０に付属した不揮発性の大容量記憶装置（例えばハードディスク装置）に記憶してもよい。後者の場合、デジタル複写機１０の電源のオン・オフを行っても、モードの設定値を保持できる。本実施形態では、この競合制御のモードとして、複写ジョブを優先するモード、印刷ジョブを優先するモードなど、５つのモードを規定している。これらモードの内容及びこれに応じた競合制御の詳細については、後に詳しく説明する。

【００３０】画像出力制御部１１６は、モード管理部１１４に設定されたモードに応じて、印刷ジョブと複写ジョブとの競合制御を行う。すなわち、画像出力制御部１１６は、モードに応じて、複写ジョブ管理部１１０のキューの先頭にある複写ジョブとプリントサーバ２０から入力される印刷ジョブのうち一方を選択し、選択した方のジョブのイメージデータをＩＯＴ１６に供給する。

【００３１】統合ジョブ管理部１００は、本実施形態の特徴の一つであり、印刷システム

（すなわちデジタル複写機１０とプリントサーバ２０）が現在保持しているすべてのジョブについて、統合的なジョブ管理を行うための手段である。この統合ジョブ管理部１００の詳細については、後に詳しく説明する。

【００３２】図４は、プリントサーバ２０の制御部２１の詳細な構成を示す機能ブロック図である。図４に示すように、制御部２１は、印刷ジョブ管理部１２０と統合ジョブ管理部１００を有する。印刷ジョブ管理部１２０は、印刷ジョブのジョブ管理を行うモジュールである。すなわち、印刷ジョブ管理部１２０は、クライアントＩ／Ｆ２３を介して印刷ジョブが入力されると、その印刷ジョブを画像処理部２５に渡し、画像処理部２５により生成されたイメージデータを、記憶装置２４に記憶する。そして、印刷ジョブ管理部１２０は、記憶装置２４に記憶した各イメージデータを、その印刷ジョブのジョブ名に対応づけて管理する。また、印刷ジョブ管理部１２０は、管理している各印刷ジョブについて、管理情報（すなわち印刷ジョブ管理情報１２２）を作成し、管理する。

【００３３】図５は、印刷ジョブ管理情報１２２の内容の一例を示す図である。この例では、印刷ジョブ管理情報１２２には、前述の複写ジョブ管理情報（図３参照）と同様、各印刷ジョブごとに、ジョブ名、ステータス、オーナー、サイズ、頁数、及び部数が登録される。各項目の内容は、複写ジョブ管理情報と同様である。なお、「ステータス」の値“ｐｒｉｎｔ”は、そのジョブが現在（デジタル複写機で）印刷中であることを示し、“１ｓｔ”及び“２ｎｄ”は、それぞれ印刷待ちの印刷ジョブのなかで先頭及び２番目であることを示している。なお、印刷ジョブ管理情報１２２のステータスにおける処理順序の値は、あくまで印刷ジョブの間での順序を示すにすぎない。同様に、（図３には示されていないが、）複写ジョブ管理情報１１２のステータスにおける処理順序の値は、複写ジョブ同士の間での処理順序を示すに過ぎない。それら処理順序の値が実際のデジタル複写機１０での印刷出力の順序にどのように反映されるかは、デジタル複写機１０のモードによって異なってくる。

【００３４】また、制御部２１は、デジタル複写機１０の制御部１１と同様、印刷システムが現在保持しているすべてのジョブについて統合的なジョブ管理を提供する統合ジョブ管理部１００を有している。この統合ジョブ管理部１００は、制御部１１に設けられるものと基本的に同じものでよい。

【００３５】３．統合ジョブ管理部次に、図６を参照して、制御部１１及び２１に設けられた統合ジョブ管理部１００の構成及び処理内容について説明する。図６に示すように、統合ジョブ管理部１００は、ジョブ情報集約部２００、管理情報記憶部２１０、ジョブ情報表示制御部２２０、ジョブ操作入力処理部２３０、ジョブ操作反映処理部２４０を含む。ジョブ情報集約部２００は、デジタル複写機１０の複写ジョブ管理部１１０及びプリントサーバ２０の印刷ジョブ管理部１２０から、複写ジョブ管理情報１１２と印刷ジョブ管理情報１２２を取得し、これらを集約して統合ジョブ管理情報２１２を作成する。作成された統合ジョブ管理情報２１２は、管理情報記憶部２１０内に記憶される。また、ジョブ情報集約部２００は、デジタル複写機１０のモード管理部１１４から競合制御に関するモー

ドの設定値を取得する。取得されたモードの設定値は、モード設定情報２１４として管理情報記憶部２１０内に記憶される。このジョブ情報集約部２００による管理情報の集約処理は、デジタル複写機１０及びプリントサーバ２０の起動時にそれぞれ実行され、その後は定期的に、あるいはイベントが発生した場合に、実行される。管理情報の集約処理のトリガとなるイベントとしては、例えば、デジタル複写機１０によるジョブ処理の完了（及びこれに伴う新たなジョブの処理の開始）、ユーザによるジョブ操作指示の入力（及びこれに伴う統合ジョブ管理情報の更新）などがある。

【００３６】図７は、統合ジョブ管理情報２１２の内容の一例を示す図である。図示のように、統合ジョブ管理情報２１２には、印刷ジョブと複写ジョブの両方の管理情報が集約されている。そして、統合ジョブ管理情報２１２には、複写ジョブ管理部１１０及び印刷ジョブ管理部１２０が管理していた情報に加え、各ジョブごとに、そのジョブの種類（すなわち複写ジョブ及び印刷ジョブのいずれか）の情報が登録されている。なお、統合ジョブ管理情報２１２における「ステータス」は、複写ジョブ管理部１１０や印刷ジョブ管理部１２０に登録されていた「ステータス」そのものではなく、複写ジョブと印刷ジョブを合わせたすべてのジョブのなかでの処理順序を表す値となっている。このため、ジョブ情報集約部２００は、複写ジョブ管理部１１０や印刷ジョブ管理部１２０に登録されていた「ステータス」と、デジタル複写機１０のモードとに基づき、各ジョブごとにジョブ全体における処理順序を決定し、これを統合ジョブ管理情報２１２に登録する。

【００３７】ジョブ情報表示制御部２２０は、統合ジョブ管理情報２１２とモード設定情報２１４の表示処理の制御を行う。ジョブ情報表示制御部２２０で生成された表示情報は、プリントサーバ２０の表示部２２ａ（又はデジタル複写機１０の表示部１２ａ）に表示される。図８R>８は、表示部２２ａにおける統合ジョブ管理情報の表示の一例を示す図である。この例は、ウインドウシステムを利用した表示の例を示している。図８において、表示ウインドウ５００には、統合ジョブ管理情報の表示欄５１０とモード設定情報の表示欄５２０が設けられている。統合ジョブ管理情報の表示欄５１０には、図７に示した統合ジョブ管理情報に基づき、各ジョブのＴｙｐｅ（種類）、ＪＯＢ名（ジョブ名）、Ｓｔａｔｕｓ（ステータス）、Ｏｗｎｅｒ（オーナー）、Ｓｉｚｅ（サイズ）、Ｐａｇｅ（頁数）、Ｃｏｐｙ（部数）が表示されている。各ジョブのＴｙｐｅを表示することにより、ユーザは、現在印刷システム内にどのようなジョブが存在するかを知ることができる。また、表示ウインドウ５００には、後述するジョブ操作等のための操作ボタン５３０が表示されている。このように、統合ジョブ管理情報２１２とモード設定情報２１４を表示することにより、ユーザは、印刷システムが現在処理（すなわち印刷）し又はこれから処理する複写ジョブ及び印刷ジョブを一度に確認することができる。

【００３８】ジョブ操作入力処理部２３０は、統合ジョブ管理情報２１２に登録されている各ジョブに対する、ユーザからの操作を受け取るモジュールである。ここで対象とする操作は、ジョブの削除、一時停止、再開、処理順序の入れ替えなど、ジョブ単位での操作

である。ジョブ操作入力処理部２３０は、プリントサーバ２０の操作入力部２２ｂ（又はデジタル複写機１０の操作入力部１２ｂ）から入力されたジョブ操作に対する指示を取得する。図８のようなウインドウ表示の場合は、ユーザは、所望の操作ボタン５３０をマウスで押下することにより、操作内容を指示することができる。この場合、操作対象のジョブは、表示欄５１０において所望のジョブをクリックすることにより指定できる。例えば、印刷ジョブ「システム図」を削除したい場合は、表示欄５１０内の「システム図」の行をクリックし、削除ボタン５３０－４を押下すればよい。移動ボタン５３０－１は、ジョブの処理順序の移動を指示するためのボタンである。あるジョブをクリックして選択し、移動ボタン５３０－１を押し、移動先をクリックすると、そのジョブの処理順序が移動先の処理順序に変わる。停止ボタン５３０－３は、ジョブの処理の保留を指示するためのボタンである。ジョブを選択し、停止ボタン５３０－３を押すと、そのジョブの処理が停止される。この場合、そのジョブのステータスは、停止状態を示す値（たとえば“ｓｕｓｐｅｎｄ”）に切り替わる。なお、ジョブの停止状態とは、そのジョブがいつでも印刷（あるいは複写）できる状態でキューに入れられているが、他の後続のジョブが先に処理されていく状態を言う。なお、停止中のジョブを選択し、再開ボタン５３０－２を押せば、そのジョブの処理が再開される。

【００３９】ジョブ操作入力処理部２３０は、操作入力部２２ｂ（または１２ｂ）を介して取得したユーザの操作指示にしたがって、統合ジョブ管理情報（特にステータス）を変更する。例えば、操作指示があるジョブの削除であった場合は、そのジョブを統合ジョブ管理情報２１２から削除し、他のジョブのステータスの調整を行う。また、ジョブ操作入力処理部２３０は、その操作指示をジョブ操作反映処理部２４０に伝える。

【００４０】ジョブ操作反映処理部２４０は、その操作指示の内容を、複写ジョブ管理部１１０の複写ジョブ管理情報１１２及び印刷ジョブ管理部１２０の印刷ジョブ管理情報１２２に反映させるための処理を行う。例えば、操作指示がある印刷ジョブの削除であった場合は、ジョブ操作反映処理部２４０は、印刷ジョブ管理部１２０に対してそのジョブの削除を指示する。この結果、その印刷ジョブが廃棄され、印刷ジョブ管理情報１２２が更新される。同様に、複写ジョブに対する操作指示が入力された場合はその操作指示は複写ジョブ管理部１１０に伝えられ、印刷ジョブと複写ジョブの双方にまたがる操作指示が入力された場合は、その操作指示は印刷ジョブ管理部１２０及び複写ジョブ管理部１１０の両方に伝えられる。このような処理により、統合ジョブ管理情報の一覧表示（図８参照）を参照して行われたユーザの操作指示が、印刷ジョブ管理部１２０及び複写ジョブ管理部１１０に反映される。

【００４１】このように、本実施形態では、ジョブ操作入力処理部２３０及びジョブ操作反映処理部２４０を設けたことにより、ユーザは、統合ジョブ管理情報の一覧表示と連動してジョブの操作指示を入力し、それをデジタル複写機１０及びプリントサーバ２０に反映させることができる。

【００４２】４．競合制御に関するモード次に、複写ジョブと印刷ジョブとの間での競合制御のためのモードについて説明する。本実施形態のシステムでは、５種類のモードを規定している。以下、それらを１つずつ説明する。

【００４３】（１）複写ジョブ優先モード１このモードは、常に複写ジョブを優先処理するモードである。このモードにあるときは、印刷ジョブは処理されない。この場合、印刷ジョブは、プリントサーバ２０内に保持され、待機状態（ステータス“ｗａｉｔ”）となる。すなわち、このモードでは、図９に示すように、複写ジョブが存在するかどうかを判定し（Ｓ１１）、存在する場合はその複写ジョブを印刷処理し（Ｓ１２）、存在しない場合は印刷処理を行わない。

【００４４】（２）複写ジョブ優先モード２このモードは、複写ジョブと印刷ジョブが競合する場合にのみ、複写ジョブを優先するモードである。したがって、デジタル複写機１０が複写ジョブを有しないときは、印刷ジョブが印刷処理される。なお、このモードにおいて、デジタル複写機１０が印刷ジョブを印刷処理している間に複写ジョブが入力された場合は、その複写ジョブは、その印刷ジョブの処理の完了を待って処理される。すなわち、このモードでは、図１０に示すように、まず複写ジョブが存在するかを判定し（Ｓ２１）、存在する場合は複写ジョブを実行する（Ｓ２２）。そして、複写ジョブがない場合にのみ、印刷ジョブが存在するか判定し（Ｓ２３）、存在すればその印刷ジョブを処理する（Ｓ２４）。

【００４５】（３）印刷ジョブ優先モード１このモードは、常に印刷ジョブを優先処理するモードである。このモードにあるときは、複写ジョブは処理されない。この場合、複写ジョブは、デジタル複写機１０内に保持され、待機状態となる。すなわち、このモードでは、図１１に示すように、印刷ジョブが存在するかどうかを判定し（Ｓ３１）、存在する場合はその印刷ジョブを印刷処理し（Ｓ３２）、存在しない場合は印刷処理を行わない。

【００４６】（４）印刷ジョブ優先モード２このモードは、複写ジョブと印刷ジョブが競合する場合にのみ、印刷ジョブを優先するモードである。したがって、印刷ジョブがなくなると、複写ジョブが処理される。なお、このモードにおいて、デジタル複写機１０が複写ジョブを印刷処理している間に印刷ジョブが入力された場合は、その印刷ジョブは、その複写ジョブの処理の完了を待って処理される。すなわち、このモードでは、図１２に示すように、まず印刷ジョブが存在するかを判定し（Ｓ４１）、存在する場合は印刷ジョブを実行する（Ｓ４２）。そして、印刷ジョブがない場合にのみ、複写ジョブが存在するか判定し（Ｓ４３）、存在すればその印刷ジョブを処理する（Ｓ４４）。

【００４７】（５）非優先モードこのモードでは、複写ジョブと印刷ジョブとは対等に扱われる。すなわち、複写ジョブと印刷ジョブは、受付順に従って順に処理される。

【００４８】このモードでは、例えば図１３に示すように、複写ジョブが存在するかどうか判定する（Ｓ５１）。複写ジョブが存在しない場合、印刷ジョブが存在するか否かを判定し（Ｓ５２）、印刷ジョブが存在すれば、その印刷ジョブを実行する（Ｓ５５）。Ｓ５１において、複写ジョブが存在する場合、更に印刷ジョブが存在するか否かを判定する（Ｓ５

３）。ここで、印刷ジョブが存在しない場合は、複写ジョブのみしか存在しないと言うことなので、複写ジョブを実行する（Ｓ５６）。Ｓ５３において複写ジョブが存在する場合には、印刷ジョブと複写ジョブの両方が存在することになる。この場合は、複写ジョブと印刷ジョブのどちらが先に本システムに受け付けられたかを判定する（Ｓ５４）。この判定の結果、印刷ジョブが先の場合は印刷ジョブを実行し（Ｓ５５）、複写ジョブが先の場合は複写ジョブを実行する（Ｓ５６）。なお、本システムでは、この非優先モードを実現するために、各ジョブの管理情報としてそのジョブを受け付けた時刻が管理されている。

【００４９】以上、本実施形態に規定されている競合制御のモードについて説明した。このモードは、デジタル複写機１０のモード管理部１１４により管理されている。そして、デジタル複写機１０がどのモードにあるかによって、複写ジョブと印刷ジョブの処理順序が変わってくる。すなわち、複写ジョブ管理部１１０は各複写ジョブの処理順序を、印刷ジョブ管理部１２０は各印刷ジョブの処理順序を、それぞれ管理しているが、複写ジョブ及び印刷ジョブを合わせたジョブ全体での処理順序は、モードが決まって始めて決まる。そこで、統合ジョブ管理部１００は、印刷ジョブと複写ジョブの管理情報を集約した時に、このモードの設定値を参照して、各ジョブの処理順序に関するステータスを決定する。例えば、印刷システムが印刷ジョブ優先モード１にあるときは複写ジョブは処理されないので、複写ジョブのステータスは待機“ｗａｉｔ”と決定される。また、システムが非優先モードにあるときは、統合ジョブ管理部１００は、各ジョブの処理順序を受付時刻に基づき決定する。このようにしてジョブ全体の中での処理順序に関するステータスを決定し、このステータスを一覧表示することにより、ユーザは、現在印刷システム内に保持されているジョブがどのような順番で処理されていくかを知ることができる。

【００５０】なお、モードは、ユーザの指示によって変更することができる。このモード変更の指示は、例えば統合ジョブ管理部１００で生成された一覧表示（図８参照）上で行うことができる。すなわち、モードの表示欄５２０に付属したプルダウンメニューからモードを選択し、設定ボタン５３０－５を押下することにより、モードを変更することができる。このモード変更の指示は、ジョブ操作反映処理部２４０を介してデジタル複写機１０のモード管理部１１４に伝えられ、そこに保持されたモードの設定値が変更される。

【００５１】また、このモードを動的に制御する方法として、次のような方法が考えられる。

【００５２】まず第一は、モードのデフォルト値を決めておき、所定時間の間印刷ジョブも複写ジョブも入力されなかった場合に、モードをそのデフォルト値に戻すという方法である。

【００５３】第二は、統合ジョブ管理部１００にて統合ジョブ管理情報の変化を監視し、同一のモードが連続した状況であるジョブが所定時間以上処理待ち状態にあるのを検出した場合は、そのジョブが印刷されるよう統合ジョブ管理部１００がモードの設定を変更するという方法である。この方法によれば、一方の種類のジョブしか処理しないモードが長

時間続いた場合に、その間処理待ち状態にあった他方の種類のジョブを処理することが可能となる。

【００５４】５．統合ジョブ管理情報の表示例次に、統合ジョブ管理部１００において生成するジョブ状況の一覧表示の変形例について説明する。図１４は、この表示の変形例を示す図である。この例では、前述の例（図８）に比べて表示項目を制限している。すなわち、この例では、ジョブの状況に関する基本的な情報、すなわちジョブのＴｙｐｅ（種類）、ＩＤ（識別子）、Ｓｔａｔｕｓ（ステータス）のみを表示している。Ｔｙｐｅ及びＳｔａｔｕｓは、図８の例と同じ項目である。ＩＤは、ジョブを他のジョブと区別するための識別番号であり、図８の例ではジョブ名に相当する。このようにジョブの種類、識別子、処理順序に関するステータスの情報は、ユーザがジョブの処理順序についての操作を行うに当たって必要な情報である。このように表示項目を限定して表示を行う場合、ジョブ情報集約部２００による管理情報の集約処理において、その表示項目に対応する情報のみを集約して、それら限られた項目のみからなる統合ジョブ管理情報を生成することもできる。また、統合ジョブ管理情報には、管理情報のすべての項目の情報を登録しておき、表示項目のみを制限することもできる。なお、図１４の表示において、ＩＤの代わりにユーザが付けたジョブ名を表示するようにしてもよい。また、図１４では、ジョブの種類を表示項目の一つ（Ｔｙｐｅ）として表示したが、ジョブの種類の表示の仕方はこれに限られるものではない。例えば、図１５に示すように、複写ジョブは通常表示で、印刷ジョブは反転表示で表示するなど、ジョブの種類によって表示形態を変えることによって両者を区別することもできる。この他、印刷ジョブと複写ジョブのうち一方をハッチング表示又はシェード（影付き）表示したり、あるいは印刷ジョブと複写ジョブとで表示色を異ならせるなどの方法を用いることもできる。印刷ジョブと複写ジョブとを区別するための表示形態は、使用するハードウエアの機能（カラー表示や中間階調表示が可能か否かなど）に応じて、適切なものを選択すればよい。

【００５５】なお、図１４の表示例と図８の表示例とを比較すると、図８の例の方が表示内容が豊富なため、ユーザにとって便利である。例えば、オーナーを表示することにより、ユーザは自分のジョブがどれなのかを知ることができるので、誤って他人のジョブに対して操作を加えてしまう可能性を低減することができる。また、サイズや頁数、部数の情報は、各ジョブの印刷に要する所要時間を推測するために用いることができる。ユーザは、このような情報を参照して、自分のジョブが処理されるまでに後どれだけ待たなければならないかを推測することができる。したがって、ユーザは、推測される時刻にデジタル複写機１０まで印刷結果を取りに行けばよく、デジタル複写機の近くで印刷結果が出るのをずっと待っている必要がなくなる。また、ユーザは、その推測に基づき、自分のジョブの処理順序を繰り上げるか、あるいは自分のジョブを取り消すかなどの判断を行うことができる。

【００５６】また、統合ジョブ管理情報についての表示項目をユーザの指定に従って増減

することもできる。この場合の表示例を示したのが図１６である。この表示例では、表示ウインドウ５００に、表示項目を変更するための表示内容ボタン５３０－６が表示されている。この表示内容ボタン５３０－６を押下すると、表示オプションウインドウ５４０が開かれる。このウインドウ５４０には、統合ジョブ管理情報２１２に登録されている項目の一覧が示されている。各項目に隣接して配置されたチェックボックスにチェックを行うか否かにより、その項目を表示するかしないかを設定することができる。ジョブ情報表示制御部２２０は、この設定に応じて、統合ジョブ管理情報２１２から必要な表示項目のみを選択し、表示する。

【００５７】６．統合ジョブ管理情報の表示に基づくジョブ操作次に、統合ジョブ管理情報の一覧表示を用いたジョブ操作の具体例をいくつか説明する。以下では、図１４の表示例を用いて説明する。

【００５８】（１）ジョブの停止ジョブの停止の指示は、停止したいジョブをマウス等で選択し、停止ボタン５３０－３を押下することにより行われる。停止されたジョブは、ステータスが停止状態となる。図１７は、ジョブの停止が指示された場合の統合ジョブ管理情報の表示例を示す図である。この例は、ＩＤ番号３３の印刷ジョブが停止された場合を示している。停止状態にあるジョブには、それを示すマーク（ｓｕｓｐｅｎｄ）が表示されている。停止状態にあるジョブは、停止が解除されるまで、後続のジョブに追い抜かれる。すなわち、図１７において、（ａ）の時点では、ＩＤ３３のジョブは、処理順位が２位で停止状態にあるが、ＩＤ３１のジョブの処理が終わると、（ｂ）に示すように処理順位が一つ繰り上がり１位となる。この時点で停止状態が解除されれば、ＩＤ３３のジョブは次に処理されることになる。ところが、ＩＤ３２のジョブの処理が完了した時点でまだＩＤ３３のジョブの停止状態が解除されていない場合は、（ｃ）に示すように、ＩＤ３３のジョブは処理順位１位のままに保たれ、次のＩＤ３４のジョブが先に処理される。なお、ジョブの停止状態の解除は、再開ボタン５３０－２を押下することにより行うことができる。

【００５９】（２）ジョブの取消ジョブの削除は、削除したいジョブを選択し、削除ボタン５３０－４を押下することにより行うことができる。ジョブの削除が指示された場合に、図１８に示すような確認表示を行ってユーザに確認を求めるような構成にすれば、誤操作によるジョブの取消を未然に防ぐことができる。

【００６０】（３）ジョブの処理順序の移動ジョブの処理順序の移動は、マウス等により、順序を移動したいジョブを選択し、移動ボタン５３０－１を押下し、移動先を選択することにより行うことができる。なお、処理順序が移動できるジョブは、競合制御のモードによって異なってくる。

【００６１】例えば、図１９は、非優先モードの場合のジョブの処理順序の移動の流れを説明する図である。非優先モードの場合は、基本的に（すなわち操作権限に制限が加えられていない限り）すべてのジョブの順序を移動することができる。図１９の例では、まずカーソルを移動（すなわち順序変更）したいジョブ（この例ではＩＤ３２）のライン上に

おいてマウスボタンを押下することにより、そのジョブが移動対象として選択され、（ａ）のように反転表示される。次に、（ｂ）に示すようにカーソルを移動ボタン５３０－１の上まで移動させ、マウスボタンを押下する。すると、移動対象として選択したジョブ（ＩＤ３２）の行が例えば点滅表示（図１９１９では破線で囲んで表現した）され、そのジョブが移動対象であることが明示される。次に、カーソルを移動させると、そのカーソルのある行が反転表示される。そして、（ｃ）に示すように、所望の移動先の行（この例ではＩＤ３３のジョブの行）にカーソルを移動し、マウスボタンを押下すると、移動先が確定する。この結果、（ｄ）に示すように、ＩＤ３２のジョブの処理順序がＩＤ３３のジョブの後に変更される。なお、この例は、移動対象のジョブの処理順序を、移動先として選択したジョブの次に移動する方式であるが、この他に、移動対象のジョブと移動先のジョブの順序を入れ替えるなどの方式を採用してもよい。また、ジョブに対する操作の取消を、例えばマウスの特定のボタンの押下によって指示できるようにしてもよい。例えば、ジョブの選択や操作の指示はマウスの左ボタンの押下で指示し、それらの取消は右ボタンの押下で指示するなどの方法である。

【００６２】非優先モード以外のモードの場合は、移動対象のジョブや移動先の選択範囲が制限される。例えば、印刷ジョブ優先モード１及び印刷ジョブ優先モード２の場合は、印刷ジョブの処理順序を複写ジョブの後に移動することはできないし、複写ジョブの処理順序をある印刷ジョブの前に移動することもできない（より厳密に言うならば、そのような処理順序の移動は、それらモードの定義上無意味である）。このような制限がある他は、非優先モードと同じ手順でジョブの処理順序を移動することができる。もしこのような移動を行いたければ、モードを変更すればよい。印刷ジョブ優先モード１及び印刷ジョブ優先モード２の場合において最も意味があるのは、印刷ジョブ同士の間での順序の変更であるが、複写ジョブ同士の間での順序の変更を認めることもできる。このような場合、移動先として不適切な行（印刷ジョブを移動する場合は、複写ジョブの行）は反転表示されないようにしたり、クリックしても選択できないようにしたりすることも好適である。なお、複写ジョブ優先モード１及び複写ジョブ優先モード２の場合は、これと反対に、複写ジョブの処理順序を印刷ジョブの後に移動すること、及び印刷ジョブの処理順序を複写ジョブの前に移動すること、ができない。

【００６３】（４）ジョブの処理順序の移動とモード変更の連動制御前節で、競合制御のモードによって、処理順序を移動できるジョブやその移動先の選択範囲が制限されることを説明した。ここでは、認められた範囲外の移動を行う場合におけるユーザの操作負担の軽減のための方法を説明する。

【００６４】認められた範囲外の移動を行う場合には、モードの変更が必要となることは既に述べた。しかしながら、ジョブの移動ができないことを確認してから、どのモードに変更すれば所望する移動が可能になるかを判断し、この判断に従ってモードの設定値を変更するという一連の作業は、ユーザにとって負担となることも考えられる。そこで、本実

施形態では、この点を考慮して、認められた範囲外の移動が指示された場合に、統合ジョブ管理部１００からユーザに対して適切なモードへのモード変更を示唆し、ユーザの了解が得られると、統合ジョブ管理部１００が自動的に適切なモードにモード変更する方式を採用した。

【００６５】図２０は、この方式を採用した場合における、ジョブの移動操作の流れの一例を示した図である。まず（ａ）に示されるように、印刷ジョブ優先モード１（すなわち複写ジョブは一切処理しないモード）において、ユーザが印刷ジョブ（ＩＤ３２）を移動対象に選んだとする。そして、この場合において、ユーザが、（ｂ）に示すように移動ボタンを押下し、更に移動先として複写ジョブ（ＩＤ２３）を選択したとする。このような移動処理は、印刷ジョブ優先モード１においては認められない。そこで、統合ジョブ管理部１００は、そのような移動処理が可能なモードとして非優先モードを選択し、（ｃ）に示すように、モードをプリント優先モード１から非優先モードに変更してもよいかどうかを問い合わせるためのウインドウ５５０を表示する。このウインドウ５５０上の問合せに対しユーザがＹｅｓのボタンを押下すると、（ｄ）に示すように、モードが非優先モードに変更され、ＩＤ３２の印刷ジョブの処理順序がＩＤ２３の複写ジョブの後に変更される。なお、ウインドウ５５０上の問合せに対し、ユーザがＮｏと回答した場合は、移動操作の指示が取り消される。

【００６６】（５）セキュリティジョブの操作を無制限に認めてしまうと、ジョブがそのジョブの所有者の了解なしに他人によって削除されたり、ジョブの処理順序が他人によって勝手に変更されたりする可能性がある。また、複数のユーザのジョブが印刷システム内に存在する場合、一人のユーザが自分の都合のよいように競合制御のモードを変更すると、他のユーザに迷惑がかかる場合が考えられる。このような問題を解決するために、ユーザができる操作の範囲を制限することが考えられる。

【００６７】具体的には、例えば、ユーザを一般ユーザと、システム管理者などのような特権ユーザとの２種類に分類するという方法がある。この場合、一般ユーザには、自分のジョブの削除又は停止、自分のジョブの順序の繰り下げなど、他のユーザに迷惑がかからない範囲の操作のみを認め、特権ユーザには、ジョブの操作やモードの変更を含めたすべての操作を認める。なお、各ユーザの本人確認のため、予め各ユーザごとにパスワードを設定しておき、操作指示が行われた際にシステム側からユーザに対しパスワードの入力を要求してもよい。

【００６８】以上、本発明の好適な実施形態について説明した。以上で説明した実施形態は、統合ジョブ管理部１００をデジタル複写機１０及びプリントサーバ２０の両方に設けた構成であった。しかしながら、これに限らず、統合ジョブ管理部１００をデジタル複写機１０及びプリントサーバ２０のいずれか一方に設ける場合も、本発明の範囲に含まれる。このような場合でも、ユーザは、複写ジョブと印刷ジョブの状況を一目で把握できるという効果が得られる。

【００６９】また、デジタル複写機１０が直接ネットワークに接続され、ネットワークを介してプリントサーバ２０と通信を行うようなネットワーク構成に対しても、本発明は適用できる。

【００７０】また、デジタル複写機１０とプリントサーバ２０の両方又は一方に統合ジョブ管理部を設ける代わりに、ネットワークに接続されたコンピュータの一つに統合ジョブ管理部の機能を実装してもよい。図２１にこのようなシステム構成の一例を示す。すなわち、図２１では、デジタル複写機１０及びプリントサーバ２０が接続されたネットワーク３０に対し、統合ジョブ管理部５２が実装されたジョブ管理コンピュータ５０が接続されている。統合ジョブ管理部５２は、前述の統合ジョブ管理部１００と同じ構成・機能を有していればよい。この場合、統合ジョブ管理部５２は、ネットワーク３０を介してデジタル複写機１０及びプリントサーバ２０と通信し、複写ジョブ管理部１１０及び印刷ジョブ管理部１２０からそれぞれの管理情報を集約するとともに、ジョブ管理コンピュータ５０上でユーザが入力した操作を複写ジョブ管理部１１０及び印刷ジョブ管理部１２０の管理情報に反映させる。なお、この構成を実現するために、複写ジョブ管理部１１０及び印刷ジョブ管理部１２０には、統合ジョブ管理部５２との情報のやり取りのためのインタフェースが設けられる。

【００７１】また、クライアント装置で、統合ジョブ管理情報の表示、及びジョブに対する操作の受付を可能とすることもできる。このためには、例えば、図２２に示すように、プリントサーバ２０にクライアント通信部１３０を設け、クライアント装置４０にジョブ操作ＵＩ４２を設ければよい。クライアント通信部１３０は、統合ジョブ管理部１００に保持された統合ジョブ管理情報をクライアント装置４０に対して送信する機能と、クライアント装置４０からの操作指示を受け付け、その操作指示を統合ジョブ管理部１００に伝える機能を有する。ジョブ操作ＵＩ４２は、プリントサーバ２０から受け取った統合ジョブ管理情報に基づき、ジョブの一覧表示を生成し、その一覧表示に基づき入力されるユーザからの操作指示をプリントサーバ２０に送る。

【００７２】また、上記実施形態では、ジョブの一覧表示として、ウインドウシステムを利用した表示例を示した。そこで、以下では、プリントサーバやデジタル複写機に設けられている表示装置がキャラクタディスプレイなどウインドウ表示が不可能な装置である場合の表示例を説明する。図２３は、このような場合の表示例を示す図である。図２３の例において、まずコマンドＡは、統合ジョブ管理情報の表示を要求するコマンドである。ユーザがこのコマンドを入力すると、統合ジョブ管理情報Ｂが表示される。コマンドＣは、ＩＤ３２のジョブをＩＤ３３のジョブの後ろに移動させるコマンドである。このコマンドが入力されたあと、統合ジョブ管理情報の表示のコマンドを入力すると、ジョブの処理順序が変更されていることが分かる。コマンドＤは、競合制御のモードの設定値の表示を求めるコマンドである。このコマンドに応じて、モードの設定値Ｅが表示される。コマンドＦは、ＩＤ３２のジョブの停止を指示するためのコマンドである。そして、コマンドＧは、

ＩＤ３２のジョブの削除を指示するためのコマンドである。このように、キャラクタディスプレイを用いた装置においても、本実施形態の手法は適用することができる。

【００７３】なお、以上に説明した本実施形態の構成は、前述の統合ジョブ管理部１００の各機能を記述したプログラムをコンピュータシステムで実行させることにより、実現することができる。このプログラムは、例えばＣＤ－ＲＯＭ（compact disk- read only memory）やフロッピーディスクなどのコンピュータ読み取り可能な記録媒体に書き込まれた形でユーザに提供される。例えば、図２４に示すように、ユーザが、上記プログラムが書き込まれたＣＤ－ＲＯＭ３５０をコンピュータ３００のＣＤ－ＲＯＭドライブ３１０に読み取らせると、そのプログラムがハードディスク装置３２０にインストールされ、実行可能な状態となる。このプログラムがオペレーティングシステムなどの制御によりメインメモリ３４０上にロードされ、プロセッサ３３０で実行されることにより、上記実施形態の機能が実現される。なお、ここでいうコンピュータ３００には、デジタル複写機１０やプリントサーバ２０も含まれる。

【００７４】

【発明の効果】以上説明したように、本発明によれば、ジョブ情報表示手段の一覧表示により、その時点で画像形成装置に管理されている複写ジョブと印刷制御装置で管理されている印刷ジョブの状況を一度に知ることができる。

【図面の簡単な説明】

【図１】 実施形態のシステムの全体構成を示す図である。

【図２】 デジタル複写機の制御部の詳細な構成を示す図である。

【図３】 複写ジョブ管理情報の一例を示す図である。

【図４】 プリントサーバの制御部の詳細な構成を示す図である。

【図５】 印刷ジョブ管理情報の一例を示す図である。

【図６】 統合ジョブ管理部の詳細な構成を示す図である。

【図７】 統合ジョブ管理情報の一例を示す図である。

【図８】 ジョブ情報表示部によるジョブ状況の一覧表示の例を示す図である。

【図９】 複写ジョブ優先モード１におけるジョブ競合制御の流れを示すフローチャートである。

【図１０】 複写ジョブ優先モード２におけるジョブ競合制御の流れを示すフローチャートである。

【図１１】 印刷ジョブ優先モード１におけるジョブ競合制御の流れを示すフローチャートである。

【図１２】 印刷ジョブ優先モード２におけるジョブ競合制御の流れを示すフローチャート

である。

【図１３】　非優先モードにおけるジョブ競合制御の流れを示すフローチャートである。

【図１４】　ジョブ状況の一覧表示の別の例を示す図である。

【図１５】　ジョブ状況の一覧表示の別の例を示す図である。

【図１６】　ジョブ状況の一覧表示の別の例を示す図である。

【図１７】　ジョブの停止状態を説明するための図である。

【図１８】　ジョブの削除の確認表示の一例を示す図である。

【図１９】　ジョブの処理順序の移動の手順を説明するための図である。

【図２０】　ジョブの処理順序の移動に連動したモード変更処理を説明するための図である。

【図２１】　統合ジョブ管理部をデジタル複写機でもプリントサーバでもないコンピュータに実装したシステム構成例を示す図である。

【図２２】　ジョブ状況の一覧表示やジョブの操作をクライアント装置４０上で行うためのシステム構成例を示す図である。

【図２３】　キャラクタディスプレイにおけるジョブ状況の一覧表示の例を示す図である。

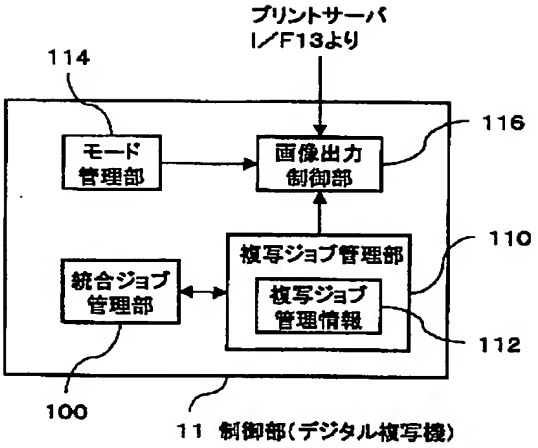
【図２４】　実施形態が実装されるコンピュータの構成を示す図である。

【図２５】　デジタル複写機を印刷手段として用いた印刷システムの構成例を示す図である。

【符号の説明】

１０ デジタル複写機、１１，２１ 制御部、１２，２２ ＵＩ（ユーザインタフェース）、１２ａ，２２ａ 表示部、１２ｂ，２２ｂ 操作入力部、１３プリントサーバＩ／Ｆ、１４ ＩＩＴ、１５ ＩＰＳ、１６ ＩＯＴ、１７，２４ 記憶装置、２０ プリントサーバ、２３ クライアントＩ／Ｆ、２５ 画像処理部、２６ 複写機Ｉ／Ｆ、３０ ネットワーク、４０ クライアント装置、１００ 統合ジョブ管理部、１１０ 複写ジョブ管理部、１１２ 複写ジョブ管理情報、１１４ モード管理部、１１６ 画像出力制御部、１２０ 印刷ジョブ管理部、１２２ 印刷ジョブ管理情報、２００ ジョブ情報集約部、２１０ 管理情報記憶部、２１２ 統合ジョブ管理情報、２１４ モード設定情報、２２０ジョブ情報表示制御部、２３０ ジョブ操作入力処理部、２４０ ジョブ操作反映処理部。

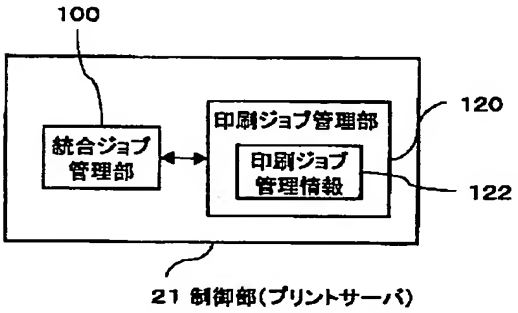
【図２】



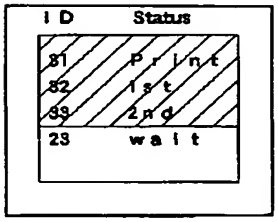
【図３】

ジョブ名	ステータス	オーナー	サイズ	頁数	部数
copy23	wait	yama	123k	5	20

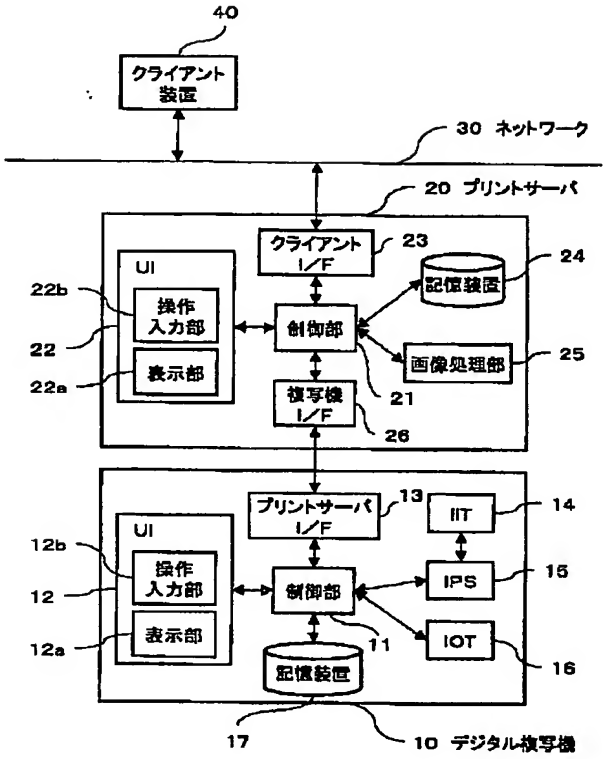
【図４】



【図１５】



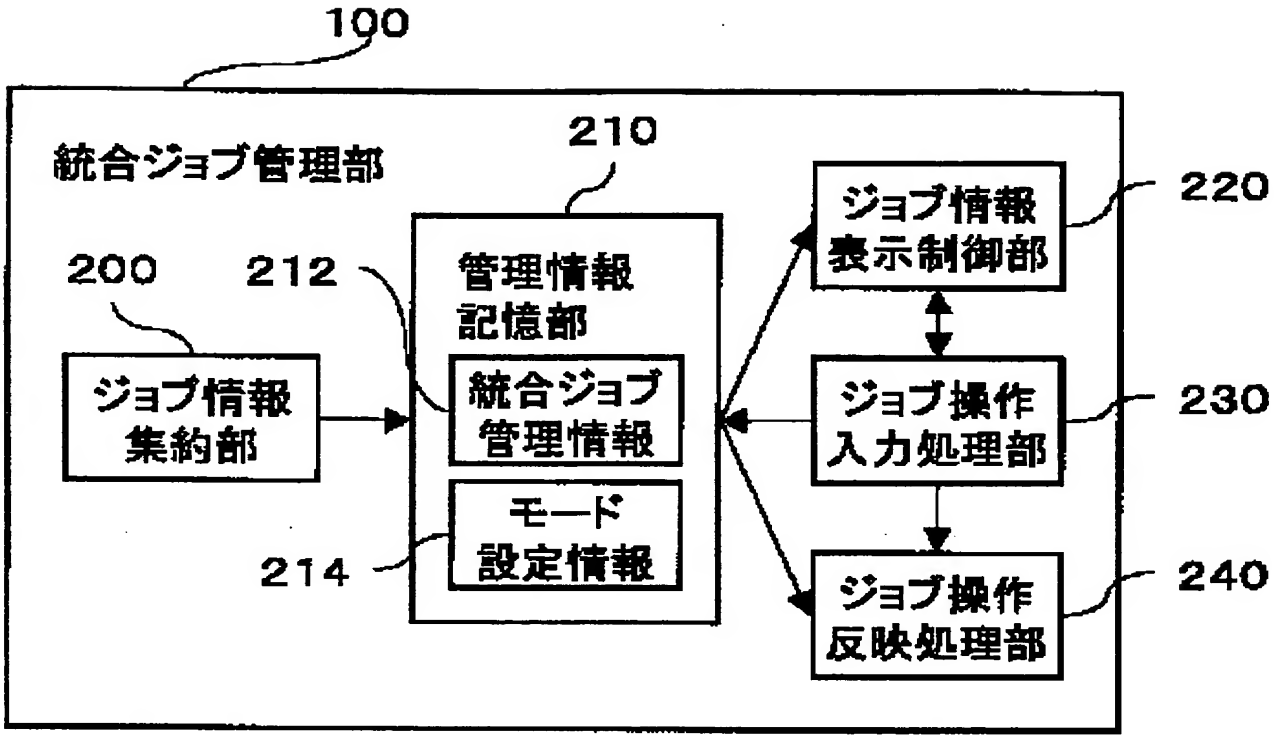
【図１】



【図５】

ジョブ名	ステータス	オーナー	サイズ	頁数	部数
特許明細書	print	abe	255k	12	2
WeeklyReport	1st	abe	98k	1	1
システム図	2nd	abe	23k	1	1

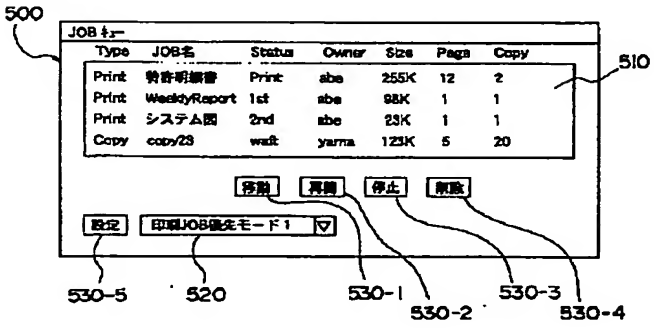
【図６】



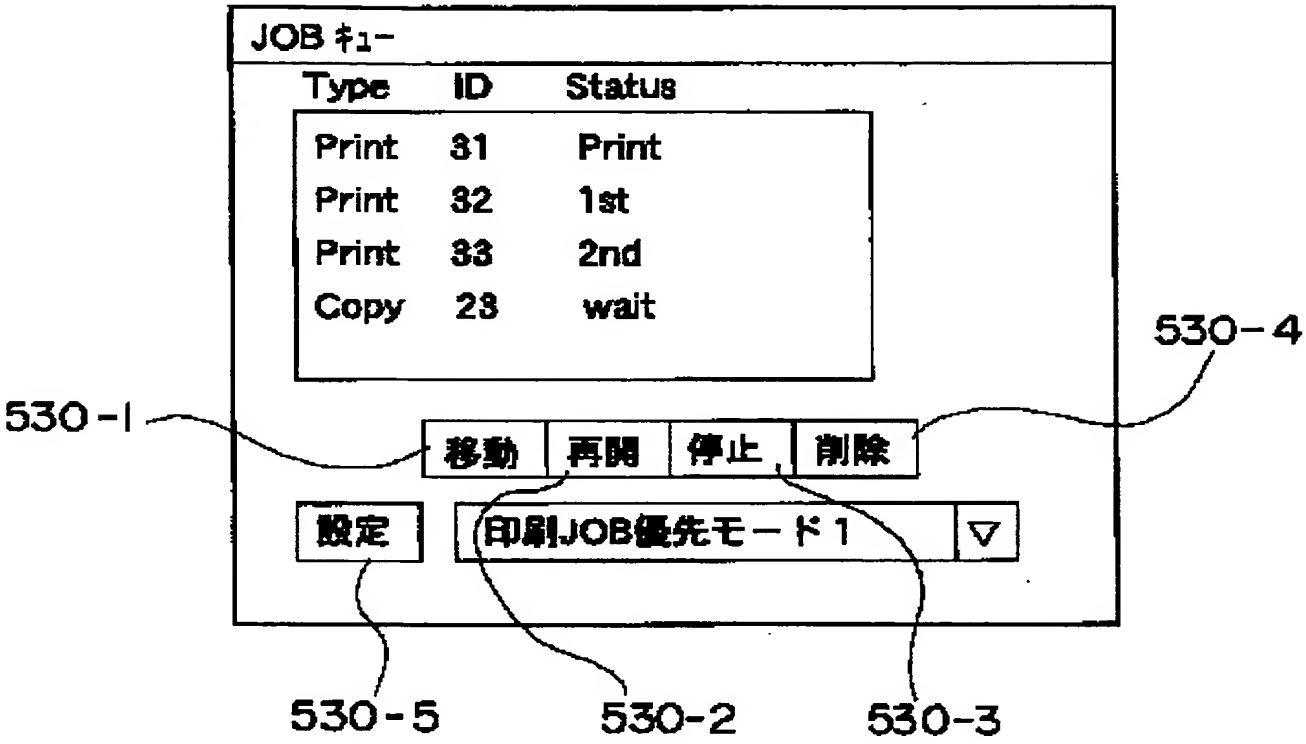
【図７】

種類	ジョブ名	ステータス	オーナー	サイズ	頁数	部数
print	特許明細書	print	abe	255k	12	2
print	WeeklyReport	1st	abe	98k	1	1
print	システム図	2nd	abe	23k	1	1
copy	copy23	wait	yama	123k	5	20

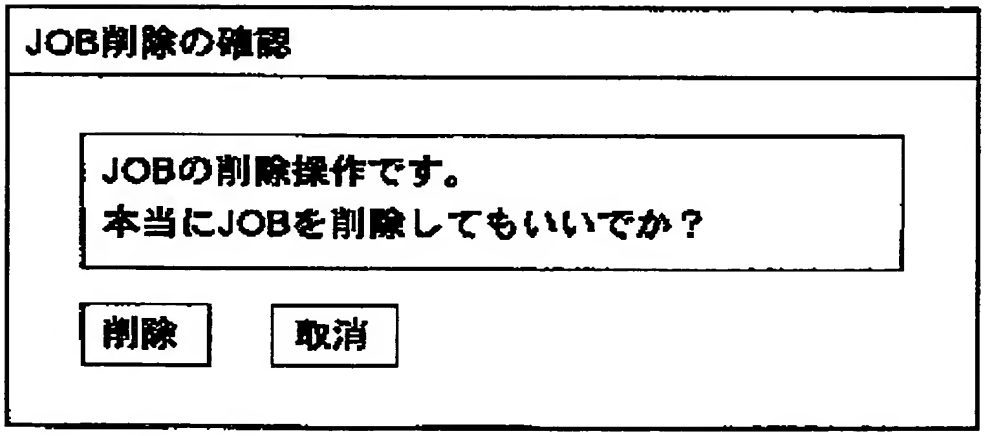
【図８】



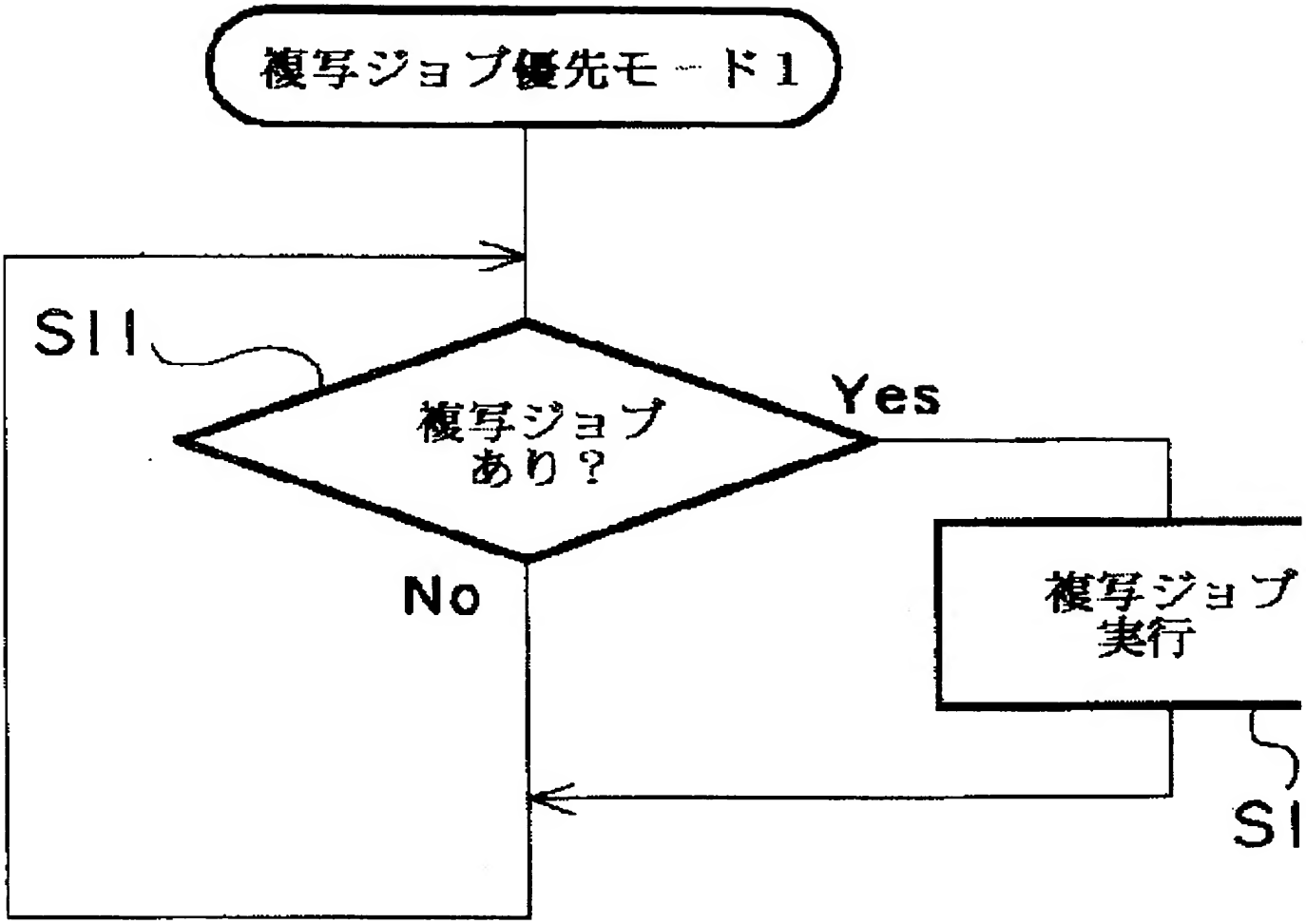
【図１４】


JOB キュー
Type ID Status
Print 31 Print
Print 32 1st
Print 33 2nd
Copy 23 wait
530-1
530-4
移動
再開
停止
削除
設定
印刷JOB優先モード1
530-5
530-2
530-3

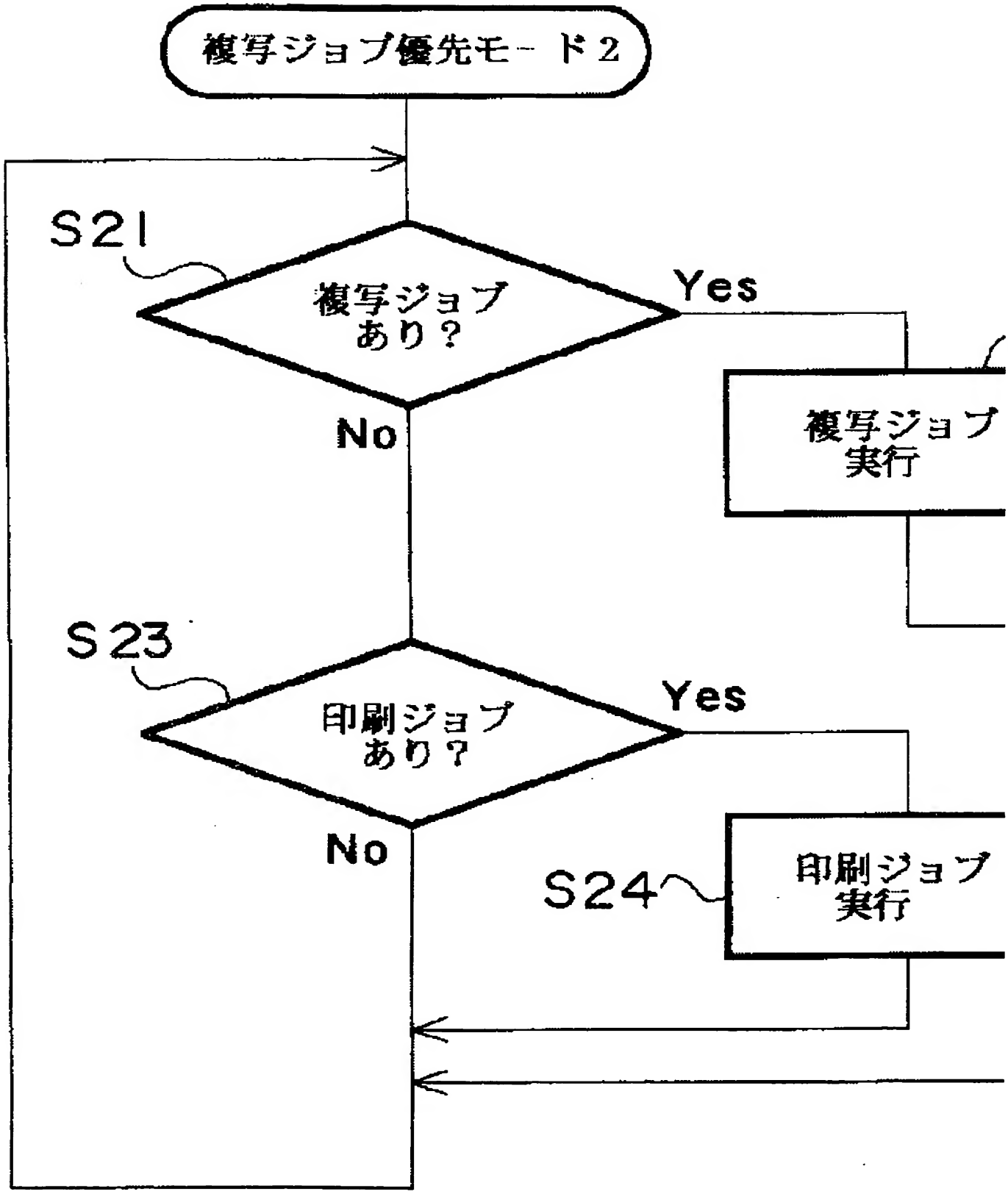
【図１８】


JOB削除の確認
JOBの削除操作です。
本当にJOBを削除してもいいでか？
削除
取消

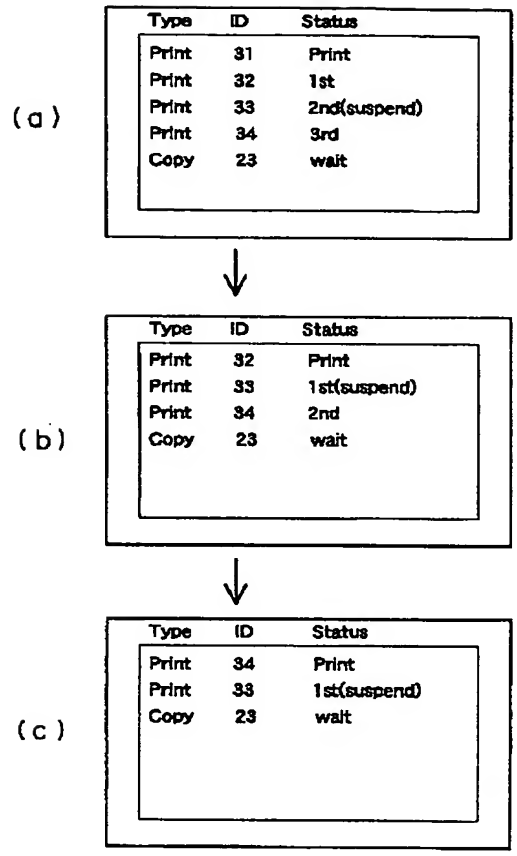
【図９】



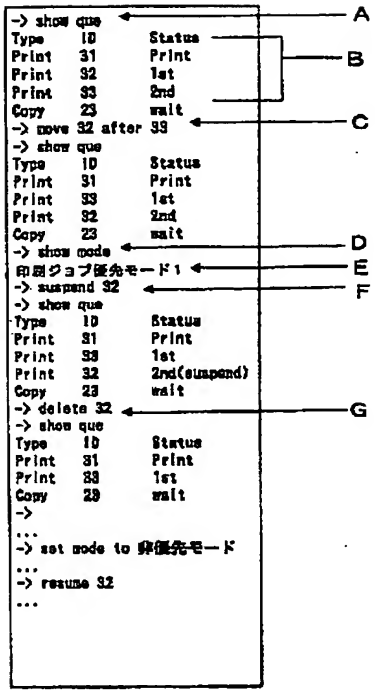
【図１０】


複写ジョブ優先モード2
S21
複写ジョブ
あり？
Yes
No
複写ジョブ
実行
S23
印刷ジョブ
あり？
Yes
No
S24
印刷ジョブ
実行

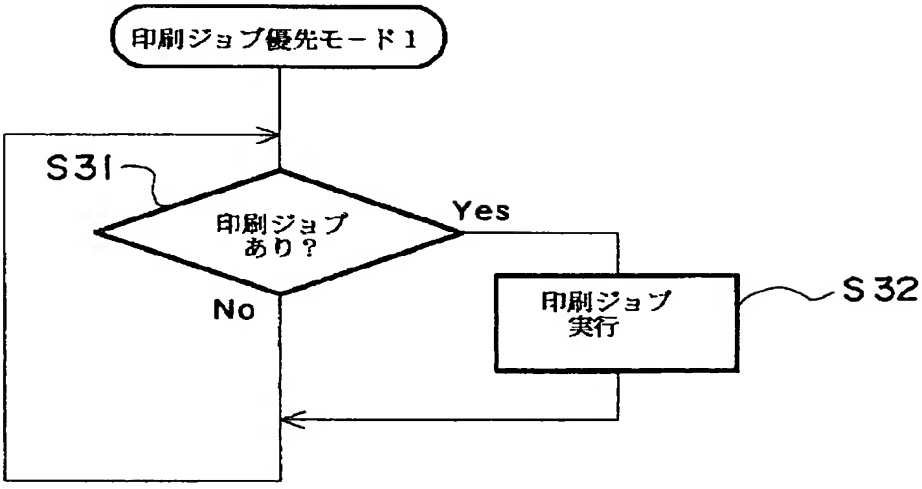
【図１７】


(a)
Type ID Status
Print 31 Print
Print 32 1st
Print 33 2nd(suspend)
Print 34 3rd
Copy 23 wait
(b)
Type ID Status
Print 32 Print
Print 33 1st(suspend)
Print 34 2nd
Copy 23 wait
(c)
Type ID Status
Print 34 Print
Print 33 1st(suspend)
Copy 23 wait

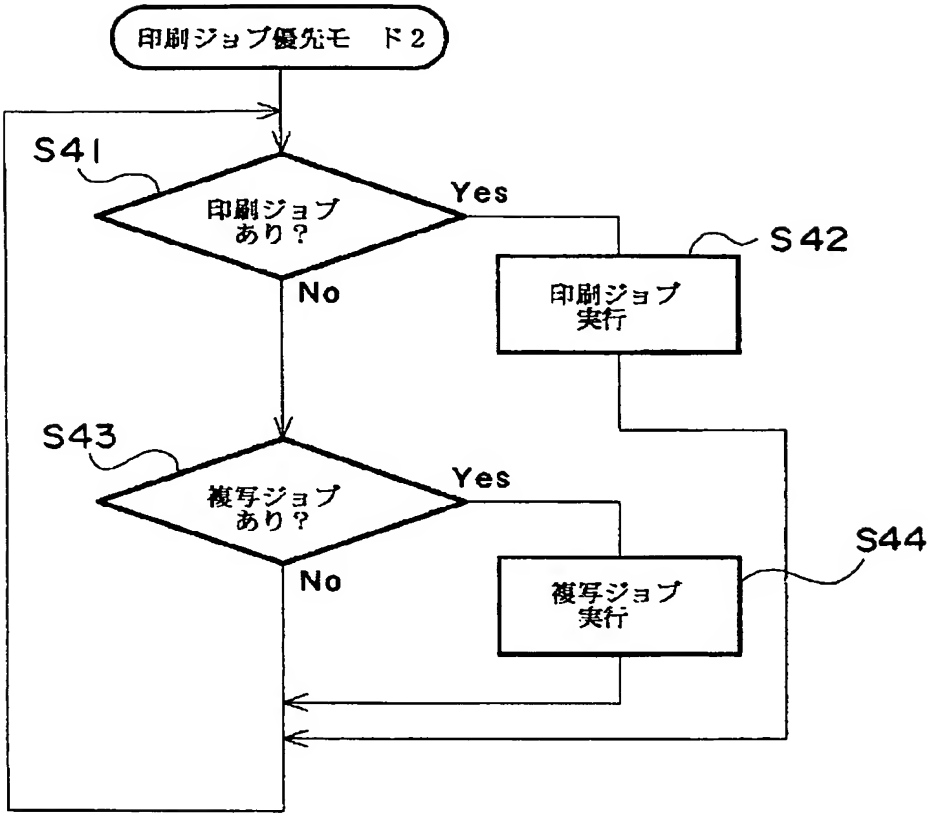
【図２３】


-> show que
Type ID Status
Print 31 Print
Print 32 1st
Print 33 2nd
Copy 23 wait
-> move 32 after 33
-> show que
Type ID Status
Print 31 Print
Print 33 1st
Print 32 2nd
Copy 23 wait
-> show mode
印刷ジョブ優先モード1
-> suspend 32
-> show que
Type ID Status
Print 31 Print
Print 33 1st
Print 32 2nd(suspend)
Copy 23 wait
-> delete 32
-> show que
Type ID Status
Print 31 Print
Print 33 1st
Copy 23 wait
->
...
-> set mode to 非優先モード
...
-> resume 32
...
A
B
C
D
E
F
G

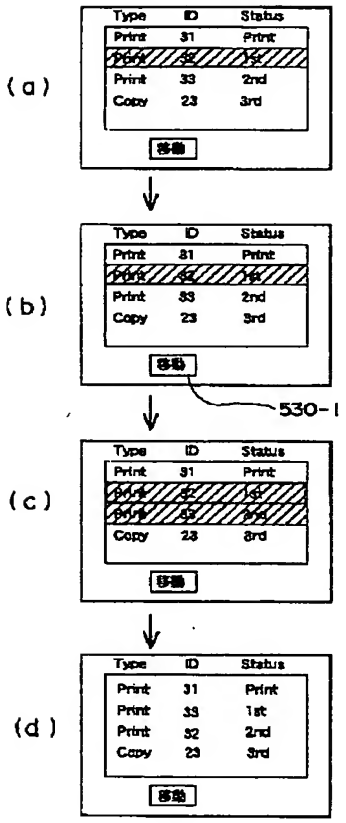
【図１１】


印刷ジョブ優先モード１
S31
印刷ジョブ
あり？
Yes
No
印刷ジョブ
実行
S32

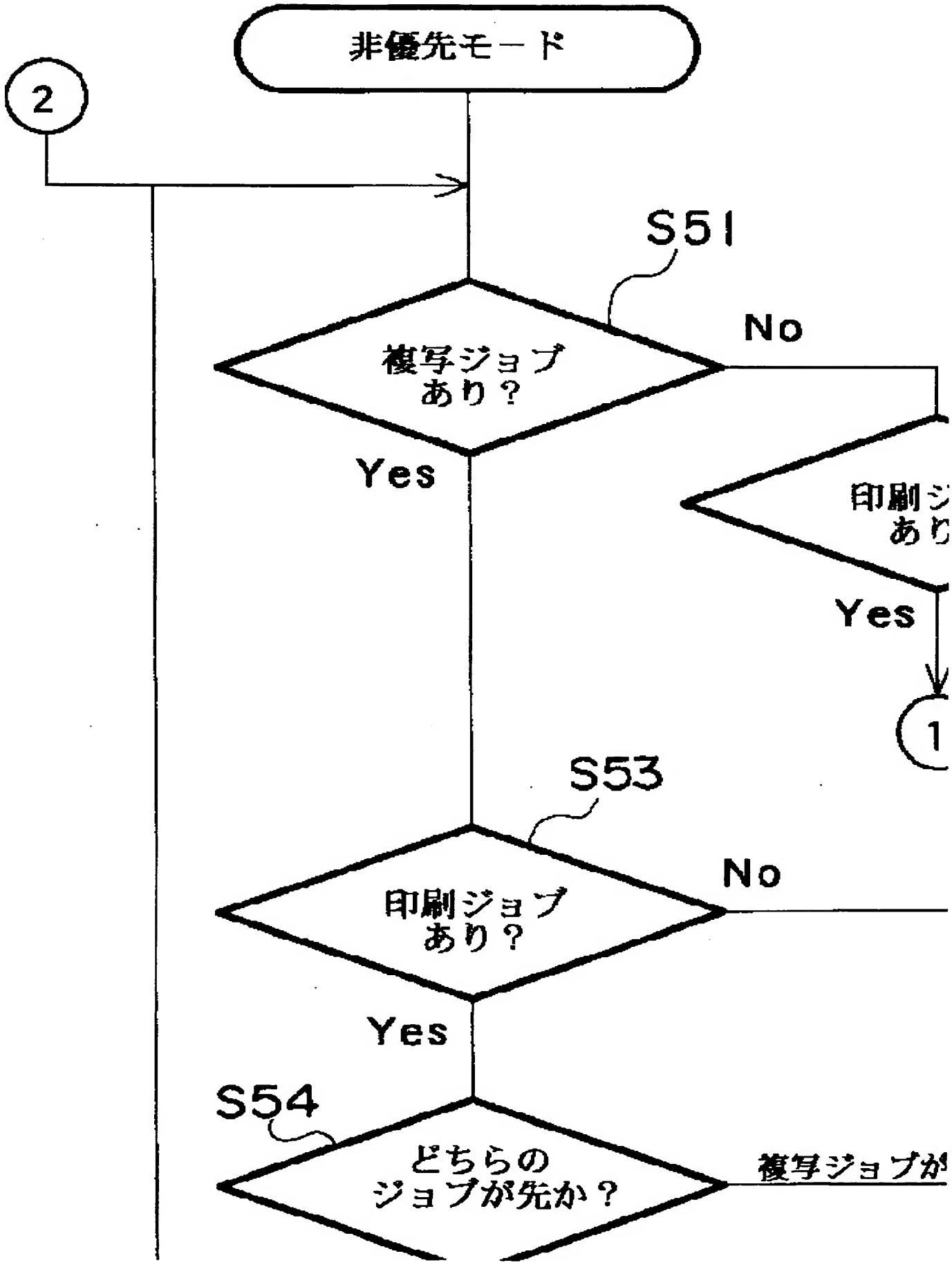
【図１２】


印刷ジョブ優先モード2
S41
印刷ジョブ
あり？
Yes
No
S42
印刷ジョブ
実行
S43
複写ジョブ
あり？
Yes
No
S44
複写ジョブ
実行

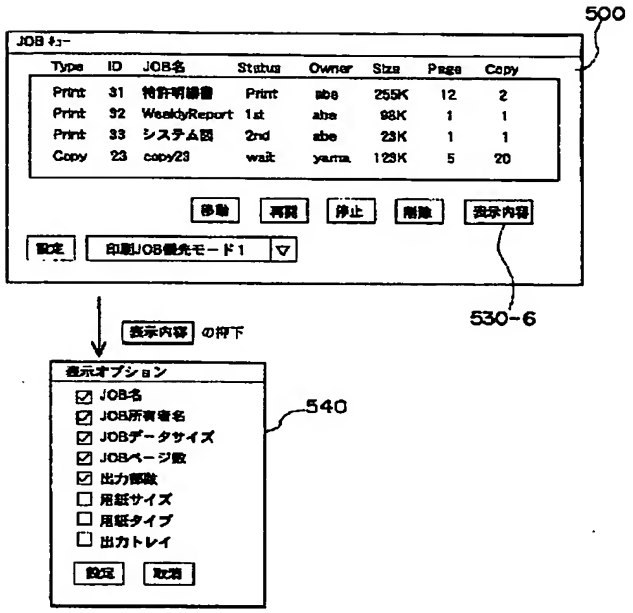
【図１９】


(a)
Type ID Status
Print 31 Print
Print 33 2nd
Copy 23 3rd
(b)
Type ID Status
Print 31 Print
Print 33 2nd
Copy 23 3rd
530-1
(c)
Type ID Status
Print 31 Print
Copy 23 3rd
(d)
Type ID Status
Print 31 Print
Print 33 1st
Print 32 2nd
Copy 23 3rd

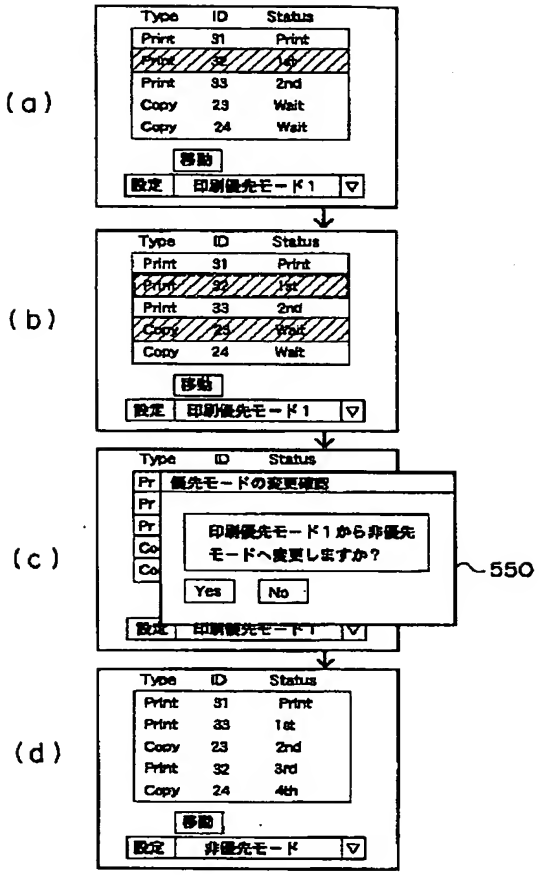
【図１３】


非優先モード
2
S51
複写ジョブ
あり？
No
Yes
印刷ジ
あり
Yes
1
S53
印刷ジョブ
あり？
No
Yes
S54
どちらの
ジョブが先か？
複写ジョブが

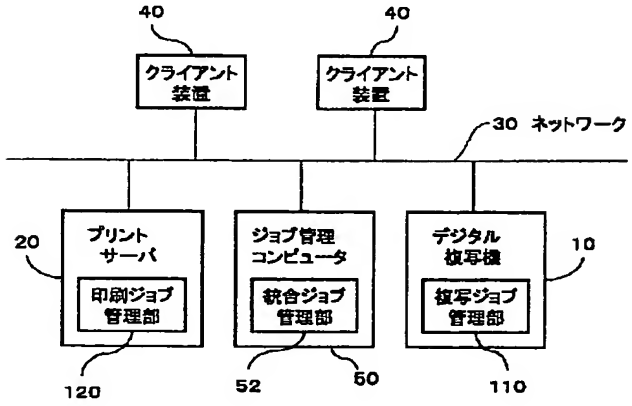
【図１６】


500
JOB キュー
Type ID JOB名 Status Owner Size Page Copy
Print 31 特許明細書 Print abe 255K 12 2
Print 32 WeeklyReport 1st abe 98K 1 1
Print 33 システム図 2nd abe 23K 1 1
Copy 23 copy23 wait yama 123K 5 20
参動
再開
停止
削除
表示内容
設定
印刷JOB優先モード1
530-6
表示内容 の押下
表示オプション
JOB名
JOB所有者名
JOBデータサイズ
JOBページ数
出力部数
用紙サイズ
用紙タイプ
出力トレイ
設定
取消
540

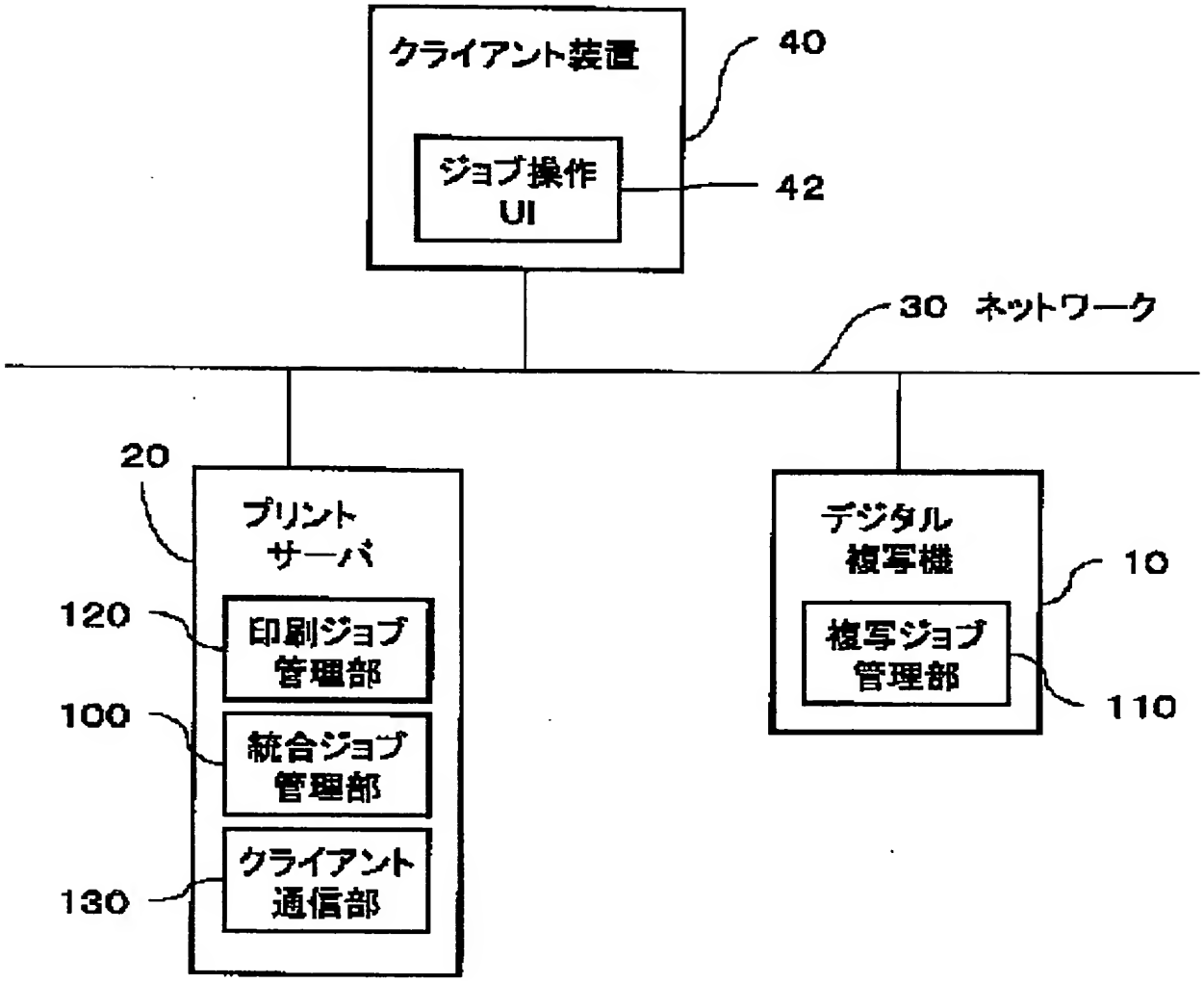
【図２０】


(a)
Type ID Status
Print 31 Print
Print 32 1st
Print 33 2nd
Copy 23 Wait
Copy 24 Wait
移動
設定 印刷優先モード1
(b)
Type ID Status
Print 31 Print
Print 32 1st
Print 33 2nd
Copy 23 Wait
Copy 24 Wait
移動
設定 印刷優先モード1
(c)
Type ID Status
優先モードの変更確認
印刷優先モード1から非優先モードへ変更しますか?
Yes
No
550
(d)
Type ID Status
Print 31 Print
Print 33 1st
Copy 23 2nd
Print 32 3rd
Copy 24 4th
移動
設定 非優先モード

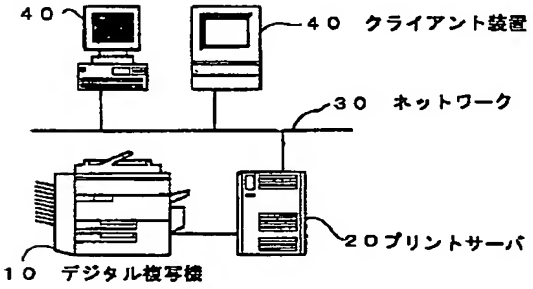
【図２１】


40
40
クライアント装置
クライアント装置
30 ネットワーク
20
プリントサーバ
印刷ジョブ管理部
ジョブ管理コンピュータ
統合ジョブ管理部
デジタル複写機
複写ジョブ管理部
10
120
52
50
110

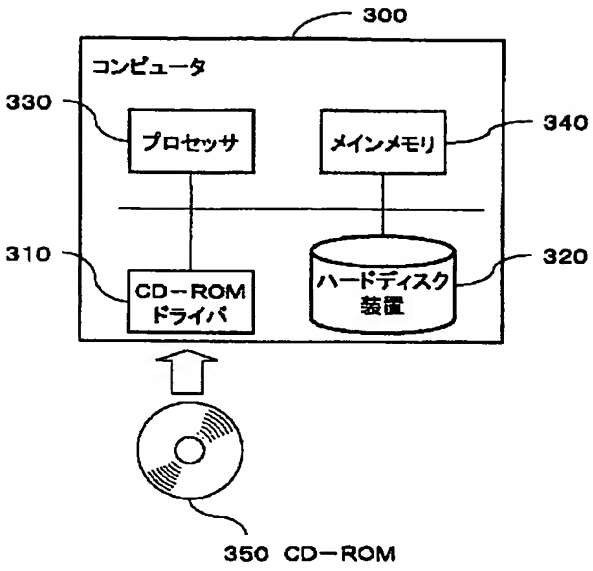
【図２２】


クライアント装置
40
ジョブ操作
UI
42
30 ネットワーク
20
プリント
サーバ
120
印刷ジョブ
管理部
100
統合ジョブ
管理部
クライアント
通信部
130
デジタル
複写機
10
複写ジョブ
管理部
110

【図２５】


４０
４０ クライアント装置
３０ ネットワーク
２０プリントサーバ
１０ デジタル複写機

【図２４】


300
コンピュータ
330
プロセッサ
メインメモリ
340
310
CD−ROM
ドライバ
ハードディスク
装置
320
350 CD−ROM

ERROR: invalidrestore
OFFENDING COMMAND: restore

STACK:

-savelevel-
-dictionary-

CLAIMS

[Claim(s)]

[Claim 1] The copy function which prints in a form the image data which was the printing system which prints an electronic image data in a form, read the manuscript optically and obtained it, While having the print facility which prints in a form the image data inputted through the communication wire The image-data group of the manuscript read in said copy function is accumulated as a copy job. The image formation equipment which generates management information including processing sequence and carries out printing processing of the accumulated copy job at order based on said management information about the accumulated copy job, Accumulate the print job given from client equipment, and the management information which includes processing sequence about the accumulated print job is generated. The print control unit which develops the accumulated print job to an image data in order based on said management information, and inputs into said image formation equipment and it is made to print through said communication wire, The management information of the copy job which said image formation equipment has, and the management information of the print job which said print control unit has are collected. A job information intensive means to generate the integrated job management information on the copy job and print job which are printed with said image formation equipment, The printing system which has the job information-display means which indicates the management information of a copy job and a print job by list based on the integrated job management information generated with said job information intensive means.

[Claim 2] In a printing system according to claim 1 said job information intensive means It is based on the management information of the collected copy job, and the management information of a print job. The status about the printing processing sequence in said image formation equipment is determined about each [these] job. The status of each determined job is held to said integrated job management information. Said job information-display means The printing system characterized by the processing sequence in said image formation equipment of each job expressing as an identifiable display gestalt in said list display based on said status of each job determined with said job information intensive means.

[Claim 3] In a printing system according to claim 2 said image formation equipment

While having two or more kinds of modes about the priority relation of the processing sequence between a copy job and a print job, the class in set-up mode is memorized. Said job information intensive means The printing system characterized by acquiring the information on the class in mode set up from said image formation equipment, and determining said status about the processing sequence in said image formation equipment of each job according to this.

[Claim 4] It is the printing system which said job information intensive means holds the job class identification information which shows whether each job is which class of a copy job or a print job to said integrated job-management information in a printing system given in either from claim 1 to claim 3, and is characterized by for said job information-display means to perform the display with the identifiable class of each [these] job in list presenting of the management information of a copy job and a print job based on said job class identification information.

[Claim 5] In a printing system given in either from claim 1 to claim 4 Furthermore, list presenting of the management information of the job by said job information-display means is interlocked with. A job actuation input means to receive the input of the operator guidance about the processing sequence of a job, The printing system characterized by having a job actuation reflection means to make the operator guidance inputted from said job actuation input means reflect in the management information of the copy job which said image formation equipment and/or said print control unit have, and/or a print job.

[Claim 6] It is the printing system characterized by displaying the size information on the job used as the reference for guessing a duration for said job information-display means printing the job for every job in a printing system according to claim 5.

[Claim 7] The printing system characterized by having a means to transmit the integrated job management information generated with said job information intensive means to client equipment in a printing system given in either from claim 1 to claim 6.

[Claim 8] The printing system characterized by having the means made to reflect in the management information of the copy job in which the operator guidance from the client equipment to the job included in said transmitted integrated job management information in a printing system according to claim 7 is received, and said image formation equipment and/or said print control unit have this operator guidance, and/or a print job.

[Claim 9] While having the copy function which prints in a form the image data which read the manuscript optically and obtained it, and the print facility which prints in a form the image data inputted through the communication wire The image-data group of

the manuscript read in said copy function is accumulated as a copy job. The image formation equipment which generates management information including processing sequence and carries out printing processing of the accumulated copy job at order based on said management information about the accumulated copy job, Accumulate the print job given from client equipment, and the management information which includes processing sequence about the accumulated print job is generated. The print control unit which develops the accumulated print job to an image data in order based on said management information, and inputs into said image formation equipment and it is made to print through said communication wire, The management information of the copy job which is the job management approach in a ****** printing system, and said image formation equipment has, and the management information of the print job which said print control unit has are collected. The job information intensive step which generates the integrated job management information on the copy job and print job which are printed with said image formation equipment, The job management approach which contains the job information-display step which indicates the management information of a copy job and a print job by list based on the integrated job management information generated with said job information intensive means.

[Claim 10] While having the copy function which prints in a form the image data which read the manuscript optically and obtained it, and the print facility which prints in a form the image data inputted through the communication wire The image-data group of the manuscript read in said copy function is accumulated as a copy job. The image formation equipment which generates management information including processing sequence and carries out printing processing of the accumulated copy job at order based on said management information about the accumulated copy job, Accumulate the print job given from client equipment, and the management information which includes processing sequence about the accumulated print job is generated. The print control unit which develops the accumulated print job to an image data in order based on said management information, and inputs into said image formation equipment and it is made to print through said communication wire, The management information of the copy job which said image formation equipment has to the computer contained in a ****** printing system, and the management information of the print job which said print control unit has are collected. The job information intensive step which generates the integrated job management information on the copy job and print job which are printed with said image formation equipment, The record medium which recorded the program for performing the job information-display step which indicates the management information of a copy job and a print job by list based on the integrated job

management information generated with said job information intensive means and in which computer read is possible.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the printing system which has image formation equipment which has both a print facility and especially a copy function as a printing means about the printing system for printing an electronic image data in a form.

[0002]

[Description of the Prior Art] A digital copier (or digital color copying machine) can be caught with the combination of the read feature which reads the image of a manuscript optically and generates a digital image data, and the print station which prints the image data in a form. A read feature and a print station are developed separately and the development technique of constituting a digital copier combining both is actually taken in many cases. IIT (Image Input Terminal) and a print station may be called IOT (Image Output Terminal) for a read feature.

[0003] On the function in which the print station of a digital copier forms a semipermanent image on a form based on a digital image data, the printer used as an output means of a computer and the place which changes in any way are not. Then, the digital copier was connected to the network etc. and the use gestalt of using as a print engine is also born. With such a use gestalt, as shown in drawing 25 , a digital copier 10 is connected to the networks 30, such as LAN (local area network), through the print server 20 as a print control unit, for example. A print server 20 has the spooler ability which receives and carries out scheduling of the print job which the client equipments 40, such as a computer, outputted, and the imaging function which develops a print job in the form of the image data which can be processed with a digital copier. If the image data from which the print server 20 developed and obtained the print job is supplied to a digital copier, a digital copier will print the image data in a form.

[0004] The processing of a single string performed for accumulating which copies one manuscript is called a copy job by contrast with a print job. It may have the mode about any the digital copier used also as a printer shall process preferentially between a print job and a copy job. For example, the digital copier which has two kinds of modes, the

local mode which gives priority to a copy job, and the remote state which gives priority to a print job, is shown in JP,5-30264,A. This digital copier is connected to the module for the printing control called ESS (equivalent to a print server), and if the processing request of a print job comes by local mode from ESS working, the signal with which a busy condition is expressed to ESS will be returned.

[0005] There are some digital copiers which build in mass storage, such as a hard disk. This kind of digital copier can store the image data which read and obtained the manuscript in that store, and can read and print an image data from that store. When copy number of copies is the 2 or more sections, as for this digital copier, read of a manuscript is performed only at once at the time of the copy of eye the one section, and henceforth [2 section] reads and prints the image data stored in the store. While printing henceforth [2 section], only the print station of a digital copier operated and the read feature is stopped. There is much what can perform only read of the following manuscript first using the idle time of such a read feature in this kind of digital copier. In such a digital copier, it matches with the image data of manuscript each read page, and the setting information that it was inputted from the control panel, such as copy number of copies and a rate of enlarging or contracting, is memorized, and in case an image data is printed later, the setting information is referred to. That is, the contents of the copy job are prescribed by the combination of such an image data and setting information.

[0006]

[Problem(s) to be Solved by the Invention] Generally, a print server displays the situation of the managed print job etc., and has UI (user interface) which receives actuation of cancellation of a print job, exchange of processing sequence, etc. On the other hand, the situation of the managed copy job etc. is displayed and there are some which have UI which receives actuation of cancellation of a job etc. also in the digital copier which has large capacity storage. In the printing system which consists of such print servers and digital copiers conventionally, the information about a print job was a print server, and the information about a copy job is a digital copier, and was managed separately, respectively. For this reason, in a print server, it was not able to know what kind of copy job is processed or accumulated with the digital copier. Moreover, similarly a digital copier was not able to know what kind of print job is spooled to the print server, and information.

[0007] Therefore, the user had to look at UI display of both a print server and a digital copier, in order to have got to know which has the print job which is waiting for printing processing with a digital copier, and a copy job. Although the configuration of drawing

25 was a configuration that a digital copier 10 was connected with a print server 20 by a direct cable etc., a configuration which connects a digital copier 10 and a print server 20 by RIMOTO through a network is also considered. When such a configuration was taken, the user was not able to see UI display of a digital copier 10 and a print server 20 in the distant location at once.

[0008] This invention is made in view of such a technical problem, and aims at offering the device for grasping the situation of a print job and a copy job at once in the printing system containing image formation equipments (digital copier etc.) and print control units (print server etc.).

[0009]

[Means for Solving the Problem] In order to attain the above-mentioned purpose, in this invention, the management information of the copy job which image formation equipment has to a printing system, and the management information of the print job which a print control unit has are collected. A job information intensive means to generate the integrated job management information on the copy job and print job which are printed with said image formation equipment, Based on the integrated job management information generated with said job information intensive means, the job information-display means which indicates the management information of a copy job and a print job by list was established.

[0010] In this configuration, image formation equipment manages the management information of a copy job, and the print control unit has managed the management information of a print job, respectively. By collecting these information managed separately with a job management information intensive means, the integrated job management information containing the management information of both a copy job and a print job is generated. And a job information-display means indicates the management information of a copy job and a print job by list based on this integrated job management information. A user can know at once the situation of the copy job managed by image formation equipment at the time, and the print job managed with the print control unit by the list display of a job information-display means.

[0011] The above-mentioned job information intensive means and a job information-display means may be formed in a print control unit or image formation equipment, and may be formed in both. Moreover, it is good also as a configuration which forms the computer equipped with the function of a job information intensive means and a job information-display means apart from a print control unit and image formation equipment, and connects the computer through a network etc. to a print control unit and image formation equipment.

[0012]

[Embodiment of the Invention] Hereafter, the gestalt (henceforth an operation gestalt) of operation of this invention is explained based on a drawing.

[0013] 1. The whole block diagram 1 is a functional block diagram showing the overall configuration of the printing system concerning this invention. In drawing 1 , the printing system consists of a digital copier 10 and a print server 20. A digital copier 10 functions also as an airline printer which prints the print job outputted from client equipment 40 while functioning as a copying machine. Hereafter, a digital copier 10 and a print server 20 are explained to a detail.

[0014] The digital copier 10 has a control section 11, UI (user interface)12, print server I/F (interface)13, IIT (Image Input Terminal)14, IPS (Image Processing system)15 and IOT (Image Output Terminal)16, and storage 17. A control section 11 is a module for controlling the digital copier 10 whole. UI12 is a user interface for the input of the actuation to a digital copier 10, and contains display 12a and actuation input section 12b. Display 12a can be constituted as a liquid crystal display. Moreover, actuation input section 12b can be constituted as various manual operation buttons. Moreover, they can also be constituted in one, being able to use display 12a and actuation input section 12b as the so-called touch panel. Print server I/F13 is an interface module for the communication link with a print server 20. IIT14 is a device for reading the manuscript for a copy optically. IPS15 is a module which processes color tone amendment, a data compression, etc. to the image data of the manuscript gained by IIT14. The image data compressed by IPS15 is memorized by the basis of control of a control section 11, and storage 17. IOT16 is supplied, after a control section 11 takes out a compression image data from a store 17 and carries out data decompression of the compression image data by IPS15 in the case of printing. IOT16 prints the received image data in a form. Since a store 17 needs to accumulate many image datas (data size cannot be disregarded although compressed) of a manuscript, it is desirable that it is large capacity. Considering cost, as a store 17, a hard disk drive unit is suitable, for example.

[0015] A digital copier 10 reads each image from the store 17, and supplies it to IOT16 while it once stores the image of manuscript each page read by IIT14 in a store 17 (that is, IOT16 is made to print). By such configuration, a digital copier 10 can perform independently reading of the copy manuscript by IIT14, and printing processing by IOT16.

[0016] Furthermore, a digital copier 10 can hold and manage two or more copy jobs. That is, a digital copier 10 recognizes the page group which collected into IIT14 by ADF

(Auto Document Feeder: automatic manuscript feed gear) etc., and was inputted to be one copy job, and manages an image data constellation per job. A control section 11 manages whether the image memorized to the store 17 is equivalent to which copy job, respectively. Moreover, a control section 11 matches with each [these] job the copy attributes (a paper size, number of copies, rate of zooming, etc.) inputted from actuation input section 12b on the occasion of the input of each [these] copy job, and manages them. The job management in a control section 11 is FIFO (FIFO) fundamentally. That is, a control section 11 puts the inputted copy job into a queue (queue) in order, takes out a copy job sequentially from the head of the queue, and IOT16 is made to print it.

[0017] Moreover, through a print server 20, a print job can be carried out with reception from client equipment 40, and a digital copier 10 can carry out printing processing of this in IOT16. Thus, in connection with processing a print job, the contention control of printing processing of a copy job and a print job is needed with a digital copier 10.

[0018] That is, the injection of the print job from client equipment 40 and the injection of the copy job in a digital copier 10 are performed to the timing of arbitration, respectively. And a print server 20 tends to make a digital copier 10 print it immediately, if a print job is received. For this reason, a print job and a copy job may reach coincidence mostly to a digital copier 10. In such a case, it is necessary to determine any shall be previously processed between a copy job and a print job.

[0019] The mode of the plurality for such contention control is specified in the digital copier 10. This contention control is performed by the control section 11. The contents of this contention control are explained in detail later.

[0020] The print server 20 has a control section 21, UI22, client I/F23, storage 24, the image-processing section 25, and copying machine I/F26. A control section 21 is a module for controlling the print server 20 whole. UI22 is a user interface for the input of the actuation to a print server 20, and contains display 22a and actuation input section 22b. For example, display 22a can be constituted as a liquid crystal display or CRT, and actuation input section 22b can be constituted as a general-purpose keyboard, a control panel of dedication, etc. Client I/F23 is an interface module for the communication link through a network 30. The print job outputted from client equipment 40 is inputted into a print server 20 from this client I/F23 through a network 30. The print job which client equipment 40 emits is a raster image, or are PDL (Page Description Language) data, such as PostScript (trademark of U.S. Adobe Systems), and PDF/TIFF (trademark of U.S. Adobe Systems). When a print job is PDL data, by as [this], it cannot print by IOT16 of a digital copier 10. Then, the image-processing section 25 interprets the print job described by PDL, and changes into the format of the image data which can process

IOT16 of a digital copier 10. In addition, on these specifications, an "image data" shall point out the data format which can process IOT16 of a digital copier 10. Thus, the generated image data is accumulated in storage 24, and waits for the sequence of printing processing to come.

[0021] Moreover, the image-processing section 25 has the function which carries out the data compression of the image data. If directions of compression preservation are included in the print job, after the data compression of the image data which constitutes the print job is carried out in the image-processing section 25, it will be memorized by storage 24. In case the image data by which compression preservation was carried out transmits to a digital copier 10, data decompression of it is carried out in the image-processing section 25, and it is returned to the original image data.

[0022] Moreover, the directions about the contents of printing may be sent besides the data which express the image for printing from client equipment 40 to a print server 20. Such directions may be sent as data with another PDL according to the protocol which may be contained in description of PDL and specified between client equipment 40 and a print server 20. A print server 20 is changed into the format that he can understand a digital copier 10, matches the contents of such printing directions with an image data, and memorizes them to storage 24. And the memorized printing directions data will be sent to a digital copier 10 with a corresponding image data, if the sequence of printing comes. A digital copier 10 supplies the printing directions data and the image data which were received to IOT16 one by one, and carries out printing processing.

[0023] Here, the directions about a printing method and the attribute information on the data for printing are included in the printing directions sent from client equipment 40. Assignment of the size of for example, an output form, a class and a medium tray, or a paper output tray, assignment of expansion/contraction, and the assignment (the location of a staple stop, a number, existence of binding processing, etc.) about after treatment are included in the directions about a printing method. In addition, the assignment about after treatment is possible only when the digital copier 10 has after-treatment functions (a staple stop, punch perforation, etc.). Moreover, the owner name of the size of the data for example, for printing, a class, a color attribute (are they a color or black and white?), and its data etc. is included in data attribute information.

[0024] In addition, since a store 24 once needs to store the data of the print job which received from client equipment 40 or needs to store the image data generated from the print job, it is desirable that it is large capacity. As a store 24, a hard disk can be used, for example. Copying machine I/F26 is an interface module for the communication link with a digital copier 10. A digital copier 10 and a print server 20 are mutually connected

through print server I/F13 and copying machine I/F26.

[0025] If the print job described by the Page Description Language is received from client equipment 40, a print server 20 will develop the basis of control of a control section 21, and this print job to an image data by the image-processing section 25, and will memorize these image datas to storage 24. A control section 21 matches with the identifiers (job name etc.) of a print job each image data memorized to the store 24, and manages it. And a control section 21 performs scheduling about the printing sequence of each print job (it is entry sequence fundamentally), and outputs the image data of each print job to a digital copier 10 according to the printing sequence. Namely, a control section 21 puts the inputted print job into a queue in order, takes out a print job sequentially from the head of the queue, and supplies it to a digital copier 10. In addition, the print server 20 has the function to change the sequence of the print job in a queue according to directions of a user. This function is later explained to a detail.

[0026] 2. Explain fundamental job management next the control section 11 of a digital copier 10, and the control section 21 of a print server 20 to a detail.

[0027] Drawing 2 is the functional block diagram showing the detailed configuration of the control section 11 of a digital copier 10. As shown in drawing 2 , a control section 11 contains the copy job management section 110, the mode Management Department 114, the image output-control section 116, and the integrated job management section 100. The copy job management section 110 is a module which performs job management of a copy job. If a copy job is inputted from IIT14, to the copy job, the copy job management section 110 will match the image data of each page of allocation and its copy job with the identifier, and will manage an identifier. This identifier is called a job name here. Moreover, the copy job management section 110 creates and manages predetermined management information (namely, copy job management information 112) about the managed copy job.

[0028] Drawing 3 is drawing showing an example of the contents of the copy job management information 112. As copy job management information 112, a job name, the status, owner, size, the number of pages, and number of copies are registered for every copy job like illustration. For example, the "status" is information which shows whether the current condition of the job, i.e., the job, is printing or it is printed by what position after this, and a condition. The status "wait" in this example shows that that job ("copy23") is in the waiting state waiting for printing processing. In addition, when processing sequence is registered into the status, printing processing of the job is carried out according to the processing sequence shown in the status. Moreover, "owner" shows the identifier of the owner of the job. In the case of a copy job, owner's

information can be acquired from ID card reader for accounting management of a copying machine. In "size", the size (cutting tool unit) of the image data of the job and the "number of pages" show the number of pages of the document of the job, and "number of copies" shows printing number of copies of the document of the job.

[0029] It is the module with which return and the mode Management Department 114 manage the mode about the contention control of a print job and a copy job to drawing 2 . The mode Management Department 114 receives a setup in the mode from a user or a system administrator, and memorizes the value in the set-up mode. In addition, the set point in the mode may be memorized on the main memory of a digital copier 10, and may be memorized to the large capacity storage (for example, hard disk drive unit) of the non-volatile attached to a digital copier 10. Even if it turns on and off the power source of a digital copier 10 in the case of the latter, the set point in the mode can be held. This operation gestalt has prescribed the five modes, such as the mode which gives priority to a copy job, and the mode which gives priority to a print job, as the mode of this contention control. The detail of the contention control according to the contents in these modes and this is explained in detail later.

[0030] The image output-control section 116 performs contention control of a print job and a copy job according to the mode set as the mode Management Department 114. That is, according to the mode, among the print jobs inputted from the copy job in the head of the queue of the copy job management section 110, and a print server 20, the image output-control section 116 chooses one side, and supplies the image data of the job of the selected one to IOT16.

[0031] The integrated job management section 100 is one of the descriptions of this operation gestalt, and is a means for performing integrative job management about all the jobs in which the printing system (namely, a digital copier 10 and a print server 20) is carrying out current maintenance. The detail of this integrated job management section 100 is explained in detail later.

[0032] Drawing 4 is the functional block diagram showing the detailed configuration of the control section 21 of a print server 20. As shown in drawing 4 , a control section 21 has the printing job management section 120 and the integrated job management section 100. The printing job management section 120 is a module which performs job management of a print job. That is, the printing job management section 120 will memorize the image data generated by the image-processing section 25 by delivery and the image-processing section 25 in the print job to storage 24, if a print job is inputted through client I/F23. And the printing job management section 120 matches with the job name of the print job each image data memorized to the store 24, and manages it.

Moreover, the printing job management section 120 creates and manages management information (namely, printing job management information 122) about each managed print job.

[0033] Drawing 5 is drawing showing an example of the contents of the printing job management information 122. In this example, a job name, the status, owner, size, the number of pages, and number of copies are registered into the printing job management information 122 for every print job like the above-mentioned copy job management information (refer to drawing 3). The contents of each item are the same as that of copy job management information. In addition, it is shown that the job is current printing the value "print" of the "status" (with digital copier), and "1st" and "2nd" show that it is a head and the 2nd in the print job of the waiting for printing, respectively. In addition, the value of the processing sequence in the status of the printing job management information 122 shows the sequence between print jobs to the last. Similarly, the value of the processing sequence in the status of the copy job management information 112 shows the processing sequence between copy jobs (although not shown in drawing 3). How it is reflected in order of the printout in the digital copier 10 with the actual value of these processing sequence changes with modes of a digital copier 10.

[0034] Moreover, the control section 21 has the integrated job management section 100 which offers job management integrative about all the jobs in which the printing system is carrying out current maintenance like the control section 11 of a digital copier 10. It is easy to be the same [this integrated job management section 100] as fundamentally as what is prepared in a control section 11.

[0035] 3. Explain the configuration and the contents of processing of the integrated job management section 100 which were prepared in control sections 11 and 21 with reference to the integrated job management section, next drawing 6 . As shown in drawing 6 , the integrated job management section 100 contains the job information intensive section 200, the management information storage section 210, the job information-display control section 220, the job actuation input-process section 230, and the job actuation reflection processing section 240. From the copy job management section 110 of a digital copier 10, and the printing job management section 120 of a print server 20, the job information intensive section 200 acquires the copy job management information 112 and the printing job management information 122, collects these, and creates the integrated job management information 212. The created integrated job management information 212 is memorized in the management information storage section 210. Moreover, the job information intensive section 200 acquires the set point in the mode about contention control from the mode Management Department 114 of a

digital copier 10. The set point in the acquired mode is memorized in the management information storage section 210 as mode setting information 214. Intensive processing of the management information by this job information intensive section 200 is performed, respectively at the time of starting of a digital copier 10 and a print server 20, and after that, periodically, when an event occurs, it is performed. As an event used as the trigger of intensive processing of management information, there are completion (and initiation of processing of the new job accompanying this) of job processing by the digital copier 10, an input (and renewal of the integrated job management information accompanying this) of the job operator guidance by the user, etc., for example.

[0036] Drawing 7 is drawing showing an example of the contents of the integrated job management information 212. Like illustration, the management information of both a print job and a copy job is collected by the integrated job management information 212. And in addition to the information which the copy job management section 110 and the printing job management section 120 had managed, the information on the class (either [namely,] a copy job and a print job) of the job is registered into the integrated job management information 212 for every job. In addition, the "status" in the integrated job management information 212 is not the "status" itself registered into the copy job management section 110 or the printing job management section 120, and serves as a value showing the processing sequence in the inside of a copy job and all the jobs with which the print job was doubled. For this reason, based on the "status" registered into the copy job management section 110 or the printing job management section 120, and the mode of a digital copier 10, the job information intensive section 200 determines the processing sequence in the whole job for every job, and registers this into the integrated job management information 212.

[0037] The job information-display control section 220 controls display processing of the integrated job management information 212 and the mode setting information 214. The display information generated by the job information-display control section 220 is displayed on display 22a (or display 12a of a digital copier 10) of a print server 20. Drawing 8 R> 8 is drawing showing an example of presenting of the integrated job management information in display 22a. This example shows the example of the display using a window system. In drawing 8 , the display column 510 of integrated job management information and the display column 520 of mode setting information are formed in the viewing window 500. Based on the integrated job management information shown in drawing 7 , Type (class) of each job, a JOB name (job name), Status (status), Owner (owner), Size (size), Page (the number of pages), and Copy (number of copies) are displayed on the display column 510 of integrated job

management information. By displaying Type of each job, a user can know what kind of job exists in the present printing system. Moreover, the manual operation button 530 for the job actuation mentioned later is displayed on the viewing window 500. Thus, a user can check at once the copy job and print job in which a printing system carries out the present processing (namely, printing) or which are processed after this by displaying the integrated job management information 212 and the mode setting information 214.

[0038] The job actuation input-process section 230 is a module to each job registered into the integrated job management information 212 which receives the actuation from a user. The target actuation is actuation in job units, such as exchange of deletion of a job, a halt, a restart, and processing sequence, here. The job actuation input-process section 230 acquires the directions to job actuation in which it was inputted from actuation input section 22b (or actuation input section 12b of a digital copier 10) of a print server 20. In a window display like drawing 8 , a user can direct the contents of actuation by carrying out the depression of the desired manual operation button 530 with a mouse. In this case, the job for actuation can be specified by clicking a desired job in the display column 510. For example, what is necessary is to click the line of the "system chart" in the display column 510 and just to carry out the depression of the deletion carbon button 530-4 to delete a print job "a system chart." The migration carbon button 530-1 is a carbon button for directing migration of the processing sequence of a job. A certain job is clicked and chosen, and if push and a migration place are clicked, the processing sequence of the job will change the migration carbon button 530-1 in order of processing of a migration place. An earth switch 530-3 is a carbon button for directing a hold of processing of a job. If a job is chosen and an earth switch 530-3 is pushed, processing of the job will be suspended. In this case, the status of that job changes to the value (for example, "suspend") which shows a idle state. In addition, although the idle state of a job is put in by the queue in the condition that the job can print at any time (or copy), it means the condition that the job of other consecutiveness is processed previously. In addition, if the job under halt is chosen and the restart carbon button 530-2 is pushed, processing of the job will be resumed.

[0039] The job actuation input-process section 230 changes integrated job management information (especially status) according to a user's operator guidance acquired through actuation input section 22b (or 12b). For example, when it is deletion of a job with operator guidance, the job is deleted from the integrated job management information 212, and the status of other jobs is adjusted. Moreover, the job actuation input-process section 230 tells the operator guidance to the job actuation reflection processing section 240.

[0040] The job actuation reflection processing section 240 performs processing for making the contents of the operator guidance reflect in the copy job management information 112 on the copy job management section 110, and the printing job management information 122 on the printing job management section 120. For example, when it is deletion of a print job with operator guidance, the job actuation reflection processing section 240 directs deletion of the job to the printing job management section 120. Consequently, that print job is discarded and the printing job management information 122 is updated. Similarly, when the operator guidance to a copy job is inputted, the operator guidance is told to the copy job management section 110, and when the operator guidance over the both sides of a print job and a copy job is inputted, the operator guidance is told to both the printing job management section 120 and the copy job management section 110. A user's operator guidance performed by such processing with reference to list presenting (refer to drawing 8) of integrated job management information is reflected in the printing job management section 120 and the copy job management section 110.

[0041] Thus, a user can be interlocked with list presenting of integrated job management information, can input the operator guidance of a job, and can make it reflect in a digital copier 10 and a print server 20 with this operation gestalt by having formed the job actuation input-process section 230 and the job actuation reflection processing section 240.

[0042] 4. Explain the mode for the contention control between the mode, next the copy job about contention control, and a print job. The system of this operation gestalt has prescribed five kinds of modes. Hereafter, every one they are explained.

[0043] (1) the copy job priority mode 1 -- this mode is the mode which always carries out the priority processing of the copy job. A print job is not processed when it is in this mode. In this case, a print job is held in a print server 20, and will be in a standby condition (status "wait"). That is, in this mode, as shown in drawing 9 , when it judges and (S11) exists [whether a copy job exists and], printing processing of that copy job is carried out (S12), and when it does not exist, printing processing is not performed.

[0044] (2) the copy job priority mode 2 -- this mode is the mode which gives priority to a copy job, only when a copy job and a print job compete. Therefore, when a digital copier 10 does not have a copy job, printing processing of the print job is carried out. In addition, in this mode, when a copy job is inputted while the digital copier 10 was carrying out printing processing of the print job, that copy job waits for completion of processing of that print job, and is processed. That is, in this mode, as shown in drawing 10 , when it judges and (S21) exists [whether a copy job exists first and], a copy job is

performed (S22). And only when there is no copy job, it judges whether a print job exists (S23), and if it exists, the print job will be processed (S24).

[0045] (3) the print job priority mode 1 -- this mode is the mode which always carries out the priority processing of the print job. A copy job is not processed when it is in this mode. In this case, a copy job is held in a digital copier 10, and will be in a standby condition. That is, in this mode, as shown in drawing 11 , when it judges and (S31) exists [whether a print job exists and], printing processing of that print job is carried out (S32), and when it does not exist, printing processing is not performed.

[0046] (4) the print job priority mode 2 -- this mode is the mode which gives priority to a print job, only when a copy job and a print job compete. Therefore, a copy job will be processed if a print job is lost. In addition, in this mode, when a print job is inputted while the digital copier 10 was carrying out printing processing of the copy job, that print job waits for completion of processing of that copy job, and is processed. That is, in this mode, as shown in drawing 12 , when it judges and (S41) exists [whether a print job exists first and], a print job is performed (S42). And only when there is no print job, it judges whether a copy job exists (S43), and if it exists, the print job will be processed (S44).

[0047] (5) Mohd non-giving priority -- in this mode, a copy job and a print job are treated on equal terms. That is, a copy job and a print job are processed in order according to the order of reception.

[0048] In this Mohd, as shown, for example in drawing 13 , it judges whether a copy job exists (S51). If it judges whether a print job exists (S52) and a print job exists when a copy job does not exist, the print job will be performed (S55). In S51, when a copy job exists, it judges whether a print job exists further (S53). Here, since it is saying that only a copy job exists when a print job does not exist, a copy job is performed (S56). When a copy job exists in S53, both a print job and a copy job will exist. In this case, it judges which should be previously received by this system between the copy job and the print job (S54). As a result of this judgment, when a print job is the point, a print job is performed (S55), and when a copy job is the point, a copy job is performed (S56). In addition, in this system, in order to realize this non-priority mode, the time of day which received that job as management information of each job is managed.

[0049] In the above, Mohd of the contention control specified in this operation gestalt was explained. This Mohd is managed by the Mohd Management Department 114 of a digital copier 10. And the processing sequence of a copy job and a print job changes by which Mohd has a digital copier 10. That is, although the copy job management section 110 manages the processing sequence of each copy job and the printing job management

section 120 has managed the processing sequence of each print job, respectively, Mohd is decided, and the processing sequence in the whole job with which the copy job and the print job were doubled is begun, and is decided. Then, the integrated job management section 100 determines the status about the processing sequence of each job with reference to this Mohd's set point, when the management information of a print job and a copy job is collected. For example, since a copy job is not processed when a printing system is in the print job priority mode 1, the status of a copy job is determined as standby "wait." Moreover, when a system is in a non-priority mode, the integrated job management section 100 determines the processing sequence of each job based on a time received. Thus, a user can know in what kind of sequence the job currently held in the present printing system will be processed by determining the status about the processing sequence in the inside of the whole job, and indicating this status by list.

[0050] In addition, Mohd can change with directions of a user. Directions of this mode change can be performed on the list display (refer to drawing 8) generated in the integrated job management section 100. That is, Mohd can be changed by choosing Mohd from the pull down menu attached to Mohd's display column 520, and carrying out the depression of the setup key 530-5. Directions of this mode change are told to the Mohd Management Department 114 of a digital copier 10 through the job actuation reflection processing section 240, and Mohd's set point held there is changed.

[0051] Moreover, it considers as the approach of controlling this Mohd dynamically, and the following approaches can be considered.

[0052] When Mohd's default is decided and a print job [between predetermined time] or copy job is not inputted the first probably, either, it is the approach of returning Mohd to the default.

[0053] The second is the approach the integrated job management section 100 changes Mohd's setup so that the job may be printed, when it is detected that the job which is in the situation that supervised change of integrated job management information in the integrated job management section 100, and the same Mohd continued is in a processing waiting state beyond predetermined time. When Mohd who processes only the job of one class continues for a long time according to this approach, it becomes possible to process the job of the class of another side which suited the processing waiting state in the meantime.

[0054] 5. Explain the example of a display of integrated job management information, next the modification of a list display of the job situation generated in the integrated job management section 100. Drawing 14 is drawing showing the modification of this display. In this example, the display item is restricted compared with the

above-mentioned example (drawing 8). That is, in this example, only Type (class) of the fundamental information about the situation of a job, i.e., a job, ID (identifier), and Status (status) are displayed. Type and Status are the same items as the example of drawing 8 . ID is an identification number for distinguishing a job from other jobs, and is equivalent to a job name in the example of drawing 8 . Thus, the information on the status about the class of job, an identifier, and processing sequence is required information when a user performs actuation about the processing sequence of a job. Thus, when displaying by limiting a display item, in intensive processing of the management information by the job information intensive section 200, only the information corresponding to the display item can be collected, and the integrated job management information which consists only of a ********** item can also be generated. Moreover, the information on all the items of management information is registered into integrated job management information, and only a display item can also be restricted to it. In addition, you may make it display the job name which the user attached instead of ID in the display of drawing 14 . Moreover, in drawing 14 , although the class of job was displayed as one (Type) of the display items, the method of a display of the class of job is not restricted to this. For example, as shown in drawing 15 , both are also distinguishable by [, such as displaying a copy job by display and usually displaying a print job in inverse video,] changing a display gestalt according to the class of job. In addition, one side can be hatching-displayed shade (shadowed) displayed among a print job and a copy job, or approaches, such as changing a foreground color by the print job and the copy job, can also be used. The display gestalt for distinguishing a print job and a copy job should just choose a suitable thing according to the function (****** [that color display and a middle gradation display are possible] etc.) of the hardware to be used.

[0055] In addition, if you compare the example of a display of drawing 14 with the example of a display of drawing 8 , since the contents of a display are more abundant in the examples of drawing 8 , it is convenient for a user. For example, since a user can know which is one's job by displaying owner, possibility of adding actuation to others' job accidentally can be reduced. Moreover, the information on size, the number of pages, and number of copies can be used in order to guess the duration which printing of each job takes. A user can guess for which with reference to such information, by the time its job is processed, it must wait the back. It becomes unnecessary therefore, for the user to wait for a printing result to come out of a printing result near the digital copier even to a digital copier 10 at the time of day guessed that what is necessary is just to go picking. Moreover, a user can judge whether the processing sequence of its job is advanced, or its

job is canceled based on the guess.

[0056] Moreover, the display item about integrated job management information can also be fluctuated according to assignment of a user. Drawing 16 showed the example of a display in this case. In this example of a display, the contents carbon button 530-6 of a display for changing a display item into a viewing window 500 is displayed. If the depression of this contents carbon button 530-6 of a display is carried out, the display option window 540 will be opened. The list of the items registered into the integrated job management information 212 is shown in this window 540. It can set up whether the item is displayed or it does not carry out by whether it checks to the check box which adjoined each item and has been arranged. The job information-display control section 220 chooses and displays only a required display item from the integrated job management information 212 according to this setup.

[0057] 6. Explain some examples of the job actuation based on presenting of integrated job management information, next the job actuation using list presenting of integrated job management information. Below, it explains using the example of a display of drawing 14 .

[0058] (1) Directions of a halt of the halt job of a job choose a job to stop with a mouse etc., and are performed by carrying out the depression of the earth switch 530-3. As for the stopped job, the status will be in a idle state. Drawing 17 is drawing showing the example of a display of integrated job management information when a halt of a job is directed. This example shows the case where the print job of ID number 33 is stopped. The mark (suspend) which shows it is displayed on the job in a idle state. The job in a idle state is passed by the consecutive job until a halt is canceled. That is, in drawing 17 , at the time of (a), although the job of ID33 has processing ranking in a idle state by the 2nd place, after processing of the job of ID31 finishes, as shown in (b), one processing ranking advances and it ranks 1st. If a idle state is canceled at this time, the job of ID33 will be processed next. However, when processing of the job of ID32 is completed and the idle state of the job of ID33 is not canceled yet, as shown in (c), the job of ID33 is maintained with the 1st place of processing ranking, and the job of following ID34 is processed previously. In addition, discharge of the idle state of a job can be performed by carrying out the depression of the restart carbon button 530-2.

[0059] (2) Deletion of the cancellation job of a job can choose a job to delete, and can be performed by carrying out the depression of the deletion carbon button 530-4. If it is made a configuration which performs an acknowledgment indicator as shown in drawing 18 , and asks a user for a check when deletion of a job is directed, cancellation of the job by the operation mistake can be prevented.

[0060] (3) Migration of the processing sequence of the migration job of the processing sequence of a job can choose a job to move sequence with a mouse etc., can push the migration carbon button 530-1, and can be performed by choosing a migration place. In addition, the job which processing sequence can move changes with Mohd of contention control.

[0061] For example, drawing 19 is drawing explaining the flow of migration of the processing sequence of the job in the case of a non-priority mode. in the case of a non-priority mode, unless the limit is added to actuation authority namely,, the sequence of all jobs is fundamentally movable. In the example of drawing 19 , by carrying out the depression of the mouse button on Rhine of a job (namely, sequence modification) (this example ID32) to move cursor first, that job is chosen as a candidate for migration, and as shown in (a), inverse video is carried out. Next, as shown in (b), cursor is moved on the migration carbon button 530-1, and the depression of the mouse button is carried out. then, the line of the job (ID32) chosen as a candidate for migration -- for example, it is indicated by flashing (the broken line surrounded and expressed in drawing 1919), and it is specified that the job is a candidate for migration. Next, if cursor is moved, the inverse video of the line with the cursor will be carried out. And a migration place will be decided, if cursor is moved to the line (this example line of the job of ID33) of a desired migration place and the depression of the mouse button is carried out, as shown in (c). Consequently, as shown in (d), the processing sequence of the job of ID32 is changed after the job of ID33. In addition, although this example is a method which moves the processing sequence of the job for migration to the degree of the job chosen as a migration place, a method, such as replacing the sequence of the job for migration and the job of a migration place, may be used for it. Moreover, you may enable it to direct the cancellation of actuation to a job by the depression of the specific carbon button of a mouse. For example, it is the approach of directing selection of a job, and directions of actuation by the depression of the left carbon button of a mouse, and directing those cancellation by the depression of a right carbon button.

[0062] In the case of Mohd other than a non-priority mode, the selection range of the job for migration or a migration place is restricted. For example, in the case of the print job priority mode 1 and the print job priority mode 2, processing sequence of a print job cannot be moved after a copy job, and it cannot move processing sequence of a copy job before a certain print job, either (if it says strictly, migration of such processing sequence is meaningless on these Mohd's definition). There is such a limit and also the processing sequence of a job is movable with the same procedure as a non-priority mode. What is necessary is just to change Mohd, if you want to perform such migration.

Having a meaning most in the case of the print job priority mode 1 and the print job priority mode 2 can also accept modification of the sequence between copy jobs, although it is modification of the sequence between print jobs. In such a case, it is suitable for a line (when moving a print job, it is the line of a copy job) unsuitable as a migration place to prevent also from choosing, even if inverse video is made not to be carried out or it clicks. moving the processing sequence of a copy job after a print job this and reversely in the case of the copy job priority mode 1 and the copy job priority mode 2, and in addition, moving the processing sequence of a print job in front of a copy job -- it cannot **.

[0063] (4) It explained that the selection range of the job which can move processing sequence, or its migration place was restricted by Mohd of contention control for the gang control foregoing paragraph of migration of the processing sequence of a job, and a mode change. Here, the approach for mitigation of the actuation burden of the user in the case of performing accepted migration out of range is explained.

[0064] When accepted migration out of range was performed, it was already said that Mohd's modification is needed. However, it judges whether after checking that migration of a job cannot be performed, the migration for which it will ask if it changes into which Mohd is attained, and it is also considered that a series of activities of changing Mohd's set point according to this decision serve as a burden for a user. So, with this operation gestalt, when the accepted migration out of range was directed in consideration of this point, the mode change to suitable Mohd was suggested from the integrated job management section 100 to the user and comprehension of a user was obtained, the integrated job management section 100 adopted the method which carries out a mode change to suitable Mohd automatically.

[0065] Drawing 20 is drawing having shown an example of the flow of migration actuation of the job at the time of adopting this method. As first shown in (a), suppose that the user chose the print job (ID32) as the candidate for migration in the print job priority mode 1 (namely, Mohd who does not process any copy job). And in this case, a user pushes a migration carbon button, as shown in (b), and he presupposes that the copy job (ID23) was further chosen as a migration place. Such migration processing is not accepted in the print job priority mode 1. Then, the integrated job management section 100 chooses a non-priority mode as Mohd in whom such migration processing is possible, and as shown in (c), it displays the window 550 for asking whether Mohd may be changed into a non-priority mode from the print priority mode 1. If a user does the depression of the carbon button of Yes to the inquiry on this window 550, as shown in (d), Mohd will be changed into a non-priority mode and the processing sequence of the print

job of ID32 will be changed after the copy job of ID23. In addition, when a user answers that it is No to the inquiry on a window 550, directions of migration actuation are canceled.

[0066] (5) If actuation of a security job is accepted without any restriction, a job may be deleted without comprehension of the owner of the job by others, or processing sequence of a job may be freely changed by others. Moreover, if Mohd of contention control is changed so that often [one's convenience of one user] when two or more users' job exists in a printing system, the case where other users are troubled can be considered. In order to solve such a problem, it is possible to restrict the range of the actuation a user can do it.

[0067] Specifically, there is a method of classifying a user into two kinds such as a general user and privileged users, such as a system administrator. In this case, deletion of their job or a halt, moving down of the sequence of their job, etc. permit a general user only actuation of the range which does not require trouble for other users, and actuation of a job and all actuation including Mohd's modification are accepted in a privileged user. in addition, him, each user,, for a check, the password is beforehand set up for every user, and when operator guidance is performed, the input of a password may be required of a user from a system side.

[0068] In the above, the suitable operation gestalt of this invention was explained. The operation gestalt explained above was the configuration of having formed the integrated job management section 100 in both the digital copier 10 and the print server 20. However, not only this but when forming the integrated job management section 100 in either a digital copier 10 and the print server 20, it is contained in the range of this invention. Even in such a case, the effectiveness that a user can grasp the situation of a copy job and a print job at a glance is acquired.

[0069] Moreover, a digital copier 10 is connected to a direct network, and this invention can be applied also to network configuration which communicates with a print server 20 through a network.

[0070] Moreover, the function of the integrated job management section may be mounted in one of the computers connected to the network instead of preparing the integrated job management section in both or one side of a digital copier 10 and a print server 20. An example of such a system configuration is shown in drawing 21 . That is, in drawing 21 , the job management computer 50 by which the integrated job management section 52 was mounted is connected to the network 30 where the digital copier 10 and the print server 20 were connected. The integrated job management section 52 should just have same configuration and function as the above-mentioned

integrated job management section 100. In this case, the integrated job management section 52 makes the actuation which the user inputted on the job management computer 50 reflect in the management information of the copy job management section 110 and the printing job management section 120 while it communicates with a digital copier 10 and a print server 20 through a network 30 and collects each management information from the copy job management section 110 and the printing job management section 120. In addition, in order to realize this configuration, the interface for the exchange of the information on the integrated job management section 52 is prepared in the copy job management section 110 and the printing job management section 120.

[0071] Moreover, reception of presenting of integrated job management information and the actuation to a job can also be enabled with client equipment. What is necessary is for that, to establish the client communications department 130 in a print server 20, and just to form the job actuation UI 42 in client equipment 40, as shown in drawing 22 . The client communications department 130 has the function to transmit the integrated job management information held at the integrated job management section 100 to client equipment 40, and the function to receive the operator guidance from client equipment 40, and to tell the operator guidance to the integrated job management section 100. Based on the integrated job management information received from the print server 20, the job actuation UI 42 generates the list display of a job, and sends the operator guidance from a user inputted based on the list display to a print server 20.

[0072] Moreover, the above-mentioned operation gestalt showed the example of a display using a window system as a list display of a job. So, below, the example of a display in case the indicating equipment prepared in the print server or the digital copier is equipment in which window displays, such as character display, are impossible is explained. Drawing 23 is drawing showing the example of a display in such a case. In the example of drawing 23 , Command A is a command which requires presenting of integrated job management information first. A user's input of this command displays the integrated job management information B. Command C is a command which moves the job of ID32 behind the job of ID33. After this command is inputted, when the command of presenting of integrated job management information is inputted, it turns out that the processing sequence of a job is changed. Command D is a command which asks for the display of the set point of Mohd of contention control. Mohd's set point E is displayed according to this command. Command F is a command for directing a halt of the job of ID32. And Command G is a command for directing deletion of the job of ID32. Thus, also in the equipment using character display, the technique of this operation

gestalt is applicable.

[0073] In addition, the configuration of this operation gestalt explained above is realizable by performing the program which described each function of the above-mentioned integrated job management section 100 by the computer system. A user is provided with this program in the form written in the record medium which can computer read CD-ROM (compact disk-read only memory), a floppy disk, etc. For example, if a user makes CD-ROM drive 310 of a computer 300 read CD-ROM350 in which the above-mentioned program was written as shown in drawing 24 , the program is installed in a hard disk drive unit 320, and will be in the condition which can be performed. The function of the above-mentioned operation gestalt is realized by this program's being loaded by control of an operating system etc. on main memory 340, and performing it by the processor 330. In addition, a digital copier 10 and a print server 20 are also contained in the computer 300 here.

[0074]

[Effect of the Invention] As explained above, according to this invention, the situation of the copy job managed by image formation equipment at the time and the print job managed with the print control unit can be known at once by the list display of a job information-display means.

TECHNICAL FIELD

[Field of the Invention] This invention relates to the printing system which has image formation equipment which has both a print facility and especially a copy function as a printing means about the printing system for printing an electronic image data in a form.

PRIOR ART

[Description of the Prior Art] A digital copier (or digital color copying machine) can be caught with the combination of the read feature which reads the image of a manuscript optically and generates a digital image data, and the print station which prints the image data in a form. A read feature and a print station are developed separately and the development technique of constituting a digital copier combining both is actually taken in many cases. IIT (Image Input Terminal) and a print station may be called IOT

(Image Output Terminal) for a read feature.

[0003] On the function in which the print station of a digital copier forms a semipermanent image on a form based on a digital image data, the printer used as an output means of a computer and the place which changes in any way are not. Then, the digital copier was connected to the network etc. and the use gestalt of using as a print engine is also born. With such a use gestalt, as shown in drawing 25 , a digital copier 10 is connected to the networks 30, such as LAN (local area network), through the print server 20 as a print control unit, for example. A print server 20 has the spooler ability which receives and carries out scheduling of the print job which the client equipments 40, such as a computer, outputted, and the imaging function which develops a print job in the form of the image data which can be processed with a digital copier. If the image data from which the print server 20 developed and obtained the print job is supplied to a digital copier, a digital copier will print the image data in a form.

[0004] The processing of a single string performed for accumulating which copies one manuscript is called a copy job by contrast with a print job. It may have Mohd about any the digital copier used also as a printer shall process preferentially between a print job and a copy job. For example, the digital copier which has two kinds of Mohd, the local mode which gives priority to a copy job, and the remote state which gives priority to a print job, is shown in JP,5-30264,A. This digital copier is connected to the module for the printing control called ESS (equivalent to a print server), and if the processing request of a print job comes by local mode from ESS working, the signal with which a busy condition is expressed to ESS will be returned.

[0005] There are some digital copiers which build in mass storage, such as a hard disk. This kind of digital copier can store the image data which read and obtained the manuscript in that store, and can read and print an image data from that store. When copy number of copies is the 2 or more sections, as for this digital copier, read of a manuscript is performed only at once at the time of the copy of eye the one section, and henceforth [2 section] reads and prints the image data stored in the store. While printing henceforth [2 section], only the print station of a digital copier operated and the read feature is stopped. There is much what can perform only read of the following manuscript first using the idle time of such a read feature in this kind of digital copier. In such a digital copier, it matches with the image data of manuscript each read page, and the setting information that it was inputted from the control panel, such as copy number of copies and a rate of enlarging or contracting, is memorized, and in case an image data is printed later, the setting information is referred to. That is, the contents of the copy job are prescribed by the combination of such an image data and setting

information.

EFFECT OF THE INVENTION

[Effect of the Invention] As explained above, according to this invention, the situation of the copy job managed by image formation equipment at the time and the print job managed with the print control unit can be known at once by the list display of a job information-display means.

TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] Generally, a print server displays the situation of the managed print job etc., and has UI (user interface) which receives actuation of cancellation of a print job, exchange of processing sequence, etc. On the other hand, the situation of the managed copy job etc. is displayed and there are some which have UI which receives actuation of cancellation of a job etc. also in the digital copier which has large capacity storage. In the printing system which consists of such print servers and digital copiers conventionally, the information about a print job was a print server, and the information about a copy job is a digital copier, and was managed separately, respectively. For this reason, in a print server, it was not able to know what kind of copy job is processed or accumulated with the digital copier. Moreover, similarly a digital copier was not able to know what kind of print job is spooled to the print server, and information.

[0007] Therefore, the user had to look at UI display of both a print server and a digital copier, in order to have got to know which has the print job which is waiting for printing processing with a digital copier, and a copy job. Although the configuration of drawing 25 was a configuration that a digital copier 10 was connected with a print server 20 by a direct cable etc., a configuration which connects a digital copier 10 and a print server 20 by RIMOTO through a network is also considered. When such a configuration was taken, the user was not able to see UI display of a digital copier 10 and a print server 20 in the distant location at once.

[0008] This invention is made in view of such a technical problem, and aims at offering the device for grasping the situation of a print job and a copy job at once in the printing system containing image formation equipments (digital copier etc.) and print control

units (print server etc.).

MEANS

[Means for Solving the Problem] In order to attain the above-mentioned purpose, in this invention, the management information of the copy job which image formation equipment has to a printing system, and the management information of the print job which a print control unit has are collected. A job information intensive means to generate the integrated job management information on the copy job and print job which are printed with said image formation equipment, Based on the integrated job management information generated with said job information intensive means, the job information-display means which indicates the management information of a copy job and a print job by list was established.

[0010] In this configuration, image formation equipment manages the management information of a copy job, and the print control unit has managed the management information of a print job, respectively. By collecting these information managed separately with a job management information intensive means, the integrated job management information containing the management information of both a copy job and a print job is generated. And a job information-display means indicates the management information of a copy job and a print job by list based on this integrated job management information. A user can know at once the situation of the copy job managed by image formation equipment at the time, and the print job managed with the print control unit by the list display of a job information-display means.

[0011] The above-mentioned job information intensive means and a job information-display means may be formed in a print control unit or image formation equipment, and may be formed in both. Moreover, it is good also as a configuration which forms the computer equipped with the function of a job information intensive means and a job information-display means apart from a print control unit and image formation equipment, and connects the computer through a network etc. to a print control unit and image formation equipment.

[0012]

[Embodiment of the Invention] Hereafter, the gestalt (henceforth an operation gestalt) of operation of this invention is explained based on a drawing.

[0013] 1. The whole block diagram 1 is a functional block diagram showing the overall configuration of the printing system concerning this invention. In drawing 1 , the

printing system consists of a digital copier 10 and a print server 20. A digital copier 10 functions also as an airline printer which prints the print job outputted from client equipment 40 while functioning as a copying machine. Hereafter, a digital copier 10 and a print server 20 are explained to a detail.

[0014] The digital copier 10 has a control section 11, UI (user interface)12, print server I/F (interface)13, IIT (Image Input Terminal)14, IPS (Image Processing system)15 and IOT (Image Output Terminal)16, and storage 17. A control section 11 is a module for controlling the digital copier 10 whole. UI12 is a user interface for the input of the actuation to a digital copier 10, and contains display 12a and actuation input section 12b. Display 12a can be constituted as a liquid crystal display. Moreover, actuation input section 12b can be constituted as various manual operation buttons. Moreover, they can also be constituted in one, being able to use display 12a and actuation input section 12b as the so-called touch panel. Print server I/F13 is an interface module for the communication link with a print server 20. IIT14 is a device for reading the manuscript for a copy optically. IPS15 is a module which processes color tone amendment, a data compression, etc. to the image data of the manuscript gained by IIT14. The image data compressed by IPS15 is memorized by the basis of control of a control section 11, and storage 17. IOT16 is supplied, after a control section 11 takes out a compression image data from a store 17 and carries out data decompression of the compression image data by IPS15 in the case of printing. IOT16 prints the received image data in a form. Since a store 17 needs to accumulate many image datas (data size cannot be disregarded although compressed) of a manuscript, it is desirable that it is large capacity. Considering cost, as a store 17, a hard disk drive unit is suitable, for example.

[0015] A digital copier 10 reads each image from the store 17, and supplies it to IOT16 while it once stores the image of manuscript each page read by IIT14 in a store 17 (that is, IOT16 is made to print). By such configuration, a digital copier 10 can perform independently reading of the copy manuscript by IIT14, and printing processing by IOT16.

[0016] Furthermore, a digital copier 10 can hold and manage two or more copy jobs. That is, a digital copier 10 recognizes the page group which collected into IIT14 by ADF (Auto Document Feeder: automatic manuscript feed gear) etc., and was inputted to be one copy job, and manages an image data constellation per job. A control section 11 manages whether the image memorized to the store 17 is equivalent to which copy job, respectively. Moreover, a control section 11 matches with each [these] job the copy attributes (a paper size, number of copies, rate of zooming, etc.) inputted from actuation

input section 12b on the occasion of the input of each [these] copy job, and manages them. The job management in a control section 11 is FIFO (FIFO) fundamentally. That is, a control section 11 puts the inputted copy job into a queue (queue) in order, takes out a copy job sequentially from the head of the queue, and IOT16 is made to print it.

[0017] Moreover, through a print server 20, a print job can be carried out with reception from client equipment 40, and a digital copier 10 can carry out printing processing of this in IOT16. Thus, in connection with processing a print job, the contention control of printing processing of a copy job and a print job is needed with a digital copier 10.

[0018] That is, the injection of the print job from client equipment 40 and the injection of the copy job in a digital copier 10 are performed to the timing of arbitration, respectively. And a print server 20 tends to make a digital copier 10 print it immediately, if a print job is received. For this reason, a print job and a copy job may reach coincidence mostly to a digital copier 10. In such a case, it is necessary to determine any shall be previously processed between a copy job and a print job.

[0019] Mohd of the plurality for such contention control is specified in the digital copier 10. This contention control is performed by the control section 11. The contents of this contention control are explained in detail later.

[0020] The print server 20 has a control section 21, UI22, client I/F23, storage 24, the image-processing section 25, and copying machine I/F26. A control section 21 is a module for controlling the print server 20 whole. UI22 is a user interface for the input of the actuation to a print server 20, and contains display 22a and actuation input section 22b. For example, display 22a can be constituted as a liquid crystal display or CRT, and actuation input section 22b can be constituted as a general-purpose keyboard, a control panel of dedication, etc. Client I/F23 is an interface module for the communication link through a network 30. The print job outputted from client equipment 40 is inputted into a print server 20 from this client I/F23 through a network 30. The print job which client equipment 40 emits is a raster image, or are PDL (Page Description Language) data, such as PostScript (trademark of U.S. Adobe Systems), and PDF/TIFF (trademark of U.S. Adobe Systems). When a print job is PDL data, by as [this], it cannot print by IOT16 of a digital copier 10. Then, the image-processing section 25 interprets the print job described by PDL, and changes into the format of the image data which can process IOT16 of a digital copier 10. In addition, on these specifications, an "image data" shall point out the data format which can process IOT16 of a digital copier 10. Thus, the generated image data is accumulated in storage 24, and waits for the sequence of printing processing to come.

[0021] Moreover, the image-processing section 25 has the function which carries out the

data compression of the image data. If directions of compression preservation are included in the print job, after the data compression of the image data which constitutes the print job is carried out in the image-processing section 25, it will be memorized by storage 24. In case the image data by which compression preservation was carried out transmits to a digital copier 10, data decompression of it is carried out in the image-processing section 25, and it is returned to the original image data.

[0022] Moreover, the directions about the contents of printing may be sent besides the data which express the image for printing from client equipment 40 to a print server 20. Such directions may be sent as data with another PDL according to the protocol which may be contained in description of PDL and specified between client equipment 40 and a print server 20. A print server 20 is changed into the format that he can understand a digital copier 10, matches the contents of such printing directions with an image data, and memorizes them to storage 24. And the memorized printing directions data will be sent to a digital copier 10 with a corresponding image data, if the sequence of printing comes. A digital copier 10 supplies the printing directions data and the image data which were received to IOT16 one by one, and carries out printing processing.

[0023] Here, the directions about a printing method and the attribute information on the data for printing are included in the printing directions sent from client equipment 40. Assignment of the size of for example, an output form, a class and a medium tray, or a paper output tray, assignment of expansion/contraction, and the assignment (the location of a staple stop, a number, existence of binding processing, etc.) about after treatment are included in the directions about a printing method. In addition, the assignment about after treatment is possible only when the digital copier 10 has after-treatment functions (a staple stop, punch perforation, etc.). Moreover, the owner name of the size of the data for example, for printing, a class, a color attribute (are they a color or black and white?), and its data etc. is included in data attribute information.

[0024] In addition, since a store 24 once needs to store the data of the print job which received from client equipment 40 or needs to store the image data generated from the print job, it is desirable that it is large capacity. As a store 24, a hard disk can be used, for example. Copying machine I/F26 is an interface module for the communication link with a digital copier 10. A digital copier 10 and a print server 20 are mutually connected through print server I/F13 and copying machine I/F26.

[0025] If the print job described by the Page Description Language is received from client equipment 40, a print server 20 will develop the basis of control of a control section 21, and this print job to an image data by the image-processing section 25, and will memorize these image datas to storage 24. A control section 21 matches with the

identifiers (job name etc.) of a print job each image data memorized to the store 24, and manages it. And a control section 21 performs scheduling about the printing sequence of each print job (it is entry sequence fundamentally), and outputs the image data of each print job to a digital copier 10 according to the printing sequence. Namely, a control section 21 puts the inputted print job into a queue in order, takes out a print job sequentially from the head of the queue, and supplies it to a digital copier 10. In addition, the print server 20 has the function to change the sequence of the print job in a queue according to directions of a user. This function is later explained to a detail.

[0026] 2. Explain fundamental job management next the control section 11 of a digital copier 10, and the control section 21 of a print server 20 to a detail.

[0027] Drawing 2 is the functional block diagram showing the detailed configuration of the control section 11 of a digital copier 10. As shown in drawing 2 , a control section 11 contains the copy job management section 110, the Mohd Management Department 114, the image output-control section 116, and the integrated job management section 100. The copy job management section 110 is a module which performs job management of a copy job. If a copy job is inputted from IIT14, to the copy job, the copy job management section 110 will match the image data of each page of allocation and its copy job with the identifier, and will manage an identifier. This identifier is called a job name here. Moreover, the copy job management section 110 creates and manages predetermined management information (namely, copy job management information 112) about the managed copy job.

[0028] Drawing 3 is drawing showing an example of the contents of the copy job management information 112. As copy job management information 112, a job name, the status, owner, size, the number of pages, and number of copies are registered for every copy job like illustration. For example, the "status" is information which shows whether the current condition of the job, i.e., the job, is printing or it is printed by what position after this, and a condition. The status "wait" in this example shows that that job ("copy23") is in the waiting state waiting for printing processing. In addition, when processing sequence is registered into the status, printing processing of the job is carried out according to the processing sequence shown in the status. Moreover, "owner" shows the identifier of the owner of the job. In the case of a copy job, owner's information can be acquired from ID card reader for accounting management of a copying machine. In "size", the size (cutting tool unit) of the image data of the job and the "number of pages" show the number of pages of the document of the job, and "number of copies" shows printing number of copies of the document of the job.

[0029] It is the module with which return and the Mohd Management Department 114

manage Mohd about the contention control of a print job and a copy job to drawing 2 . The Mohd Management Department 114 receives Mohd's setup from a user or a system administrator, and memorizes Mohd's set-up value. In addition, Mohd's set point may be memorized on the main memory of a digital copier 10, and may be memorized to the large capacity storage (for example, hard disk drive unit) of the non-volatile attached to a digital copier 10. Even if it turns on and off the power source of a digital copier 10 in the case of the latter, Mohd's set point can be held. This operation gestalt has prescribed five Mohd, such as Mohd who gives priority to a copy job, and Mohd who gives priority to a print job, as Mohd of this contention control. The detail of the contention control according to these Mohd's contents and this is explained in detail later.

[0030] The image output-control section 116 performs contention control of a print job and a copy job according to Mohd set as the Mohd Management Department 114. That is, according to Mohd, among the print jobs inputted from the copy job in the head of the queue of the copy job management section 110, and a print server 20, the image output-control section 116 chooses one side, and supplies the image data of the job of the selected one to IOT16.

[0031] The integrated job management section 100 is one of the descriptions of this operation gestalt, and is a means for performing integrative job management about all the jobs in which the printing system (namely, a digital copier 10 and a print server 20) is carrying out current maintenance. The detail of this integrated job management section 100 is explained in detail later.

[0032] Drawing 4 is the functional block diagram showing the detailed configuration of the control section 21 of a print server 20. As shown in drawing 4 , a control section 21 has the printing job management section 120 and the integrated job management section 100. The printing job management section 120 is a module which performs job management of a print job. That is, the printing job management section 120 will memorize the image data generated by the image-processing section 25 by delivery and the image-processing section 25 in the print job to storage 24, if a print job is inputted through client I/F23. And the printing job management section 120 matches with the job name of the print job each image data memorized to the store 24, and manages it. Moreover, the printing job management section 120 creates and manages management information (namely, printing job management information 122) about each managed print job.

[0033] Drawing 5 is drawing showing an example of the contents of the printing job management information 122. In this example, a job name, the status, owner, size, the number of pages, and number of copies are registered into the printing job management

information 122 for every print job like the above-mentioned copy job management information (refer to drawing 3). The contents of each item are the same as that of copy job management information. In addition, it is shown that the job is current printing the value "print" of the "status" (with digital copier), and "1st" and "2nd" show that it is a head and the 2nd in the print job of the waiting for printing, respectively. In addition, the value of the processing sequence in the status of the printing job management information 122 shows the sequence between print jobs to the last. Similarly, the value of the processing sequence in the status of the copy job management information 112 shows the processing sequence between copy jobs (although not shown in drawing 3). How it is reflected in order of the printout in the digital copier 10 with the actual value of these processing sequence changes with Mohd of a digital copier 10.

[0034] Moreover, the control section 21 has the integrated job management section 100 which offers job management integrative about all the jobs in which the printing system is carrying out current maintenance like the control section 11 of a digital copier 10. It is easy to be the same [this integrated job management section 100] as fundamentally as what is prepared in a control section 11.

[0035] 3. Explain the configuration and the contents of processing of the integrated job management section 100 which were prepared in control sections 11 and 21 with reference to the integrated job management section, next drawing 6 . As shown in drawing 6 , the integrated job management section 100 contains the job information intensive section 200, the management information storage section 210, the job information-display control section 220, the job actuation input-process section 230, and the job actuation reflection processing section 240. From the copy job management section 110 of a digital copier 10, and the printing job management section 120 of a print server 20, the job information intensive section 200 acquires the copy job management information 112 and the printing job management information 122, collects these, and creates the integrated job management information 212. The created integrated job management information 212 is memorized in the management information storage section 210. Moreover, the job information intensive section 200 acquires the set point of Mohd about contention control from the Mohd Management Department 114 of a digital copier 10. Mohd's acquired set point is memorized in the management information storage section 210 as mode setting information 214. Intensive processing of the management information by this job information intensive section 200 is performed, respectively at the time of starting of a digital copier 10 and a print server 20, and after that, periodically, when an event occurs, it is performed. As an event used as the trigger of intensive processing of management information, there are completion (and initiation

of processing of the new job accompanying this) of job processing by the digital copier 10, an input (and renewal of the integrated job management information accompanying this) of the job operator guidance by the user, etc., for example.

[0036] Drawing 7 is drawing showing an example of the contents of the integrated job management information 212. Like illustration, the management information of both a print job and a copy job is collected by the integrated job management information 212. And in addition to the information which the copy job management section 110 and the printing job management section 120 had managed, the information on the class (either [namely,] a copy job and a print job) of the job is registered into the integrated job management information 212 for every job. In addition, the "status" in the integrated job management information 212 is not the "status" itself registered into the copy job management section 110 or the printing job management section 120, and serves as a value showing the processing sequence in the inside of a copy job and all the jobs with which the print job was doubled. For this reason, based on the "status" registered into the copy job management section 110 or the printing job management section 120, and Mohd of a digital copier 10, the job information intensive section 200 determines the processing sequence in the whole job for every job, and registers this into the integrated job management information 212.

[0037] The job information-display control section 220 controls display processing of the integrated job management information 212 and the mode setting information 214. The display information generated by the job information-display control section 220 is displayed on display 22a (or display 12a of a digital copier 10) of a print server 20. Drawing 8 R> 8 is drawing showing an example of presenting of the integrated job management information in display 22a. This example shows the example of the display using a window system. In drawing 8 , the display column 510 of integrated job management information and the display column 520 of mode setting information are formed in the viewing window 500. Based on the integrated job management information shown in drawing 7 , Type (class) of each job, a JOB name (job name), Status (status), Owner (owner), Size (size), Page (the number of pages), and Copy (number of copies) are displayed on the display column 510 of integrated job management information. By displaying Type of each job, a user can know what kind of job exists in the present printing system. Moreover, the manual operation button 530 for the job actuation mentioned later is displayed on the viewing window 500. Thus, a user can check at once the copy job and print job in which a printing system carries out the present processing (namely, printing) or which are processed after this by displaying the integrated job management information 212 and the mode setting information 214.

[0038] The job actuation input-process section 230 is a module to each job registered into the integrated job management information 212 which receives the actuation from a user. The target actuation is actuation in job units, such as exchange of deletion of a job, a halt, a restart, and processing sequence, here. The job actuation input-process section 230 acquires the directions to job actuation in which it was inputted from actuation input section 22b (or actuation input section 12b of a digital copier 10) of a print server 20. In a window display like drawing 8 , a user can direct the contents of actuation by carrying out the depression of the desired manual operation button 530 with a mouse. In this case, the job for actuation can be specified by clicking a desired job in the display column 510. For example, what is necessary is to click the line of the "system chart" in the display column 510 and just to carry out the depression of the deletion carbon button 530-4 to delete a print job "a system chart." The migration carbon button 530-1 is a carbon button for directing migration of the processing sequence of a job. A certain job is clicked and chosen, and if push and a migration place are clicked, the processing sequence of the job will change the migration carbon button 530-1 in order of processing of a migration place. An earth switch 530-3 is a carbon button for directing a hold of processing of a job. If a job is chosen and an earth switch 530-3 is pushed, processing of the job will be suspended. In this case, the status of that job changes to the value (for example, "suspend") which shows a idle state. In addition, although the idle state of a job is put in by the queue in the condition that the job can print at any time (or copy), it means the condition that the job of other consecutiveness is processed previously. In addition, if the job under halt is chosen and the restart carbon button 530-2 is pushed, processing of the job will be resumed.

[0039] The job actuation input-process section 230 changes integrated job management information (especially status) according to a user's operator guidance acquired through actuation input section 22b (or 12b). For example, when it is deletion of a job with operator guidance, the job is deleted from the integrated job management information 212, and the status of other jobs is adjusted. Moreover, the job actuation input-process section 230 tells the operator guidance to the job actuation reflection processing section 240.

[0040] The job actuation reflection processing section 240 performs processing for making the contents of the operator guidance reflect in the copy job management information 112 on the copy job management section 110, and the printing job management information 122 on the printing job management section 120. For example, when it is deletion of a print job with operator guidance, the job actuation reflection processing section 240 directs deletion of the job to the printing job management section

120. Consequently, that print job is discarded and the printing job management information 122 is updated. Similarly, when the operator guidance to a copy job is inputted, the operator guidance is told to the copy job management section 110, and when the operator guidance over the both sides of a print job and a copy job is inputted, the operator guidance is told to both the printing job management section 120 and the copy job management section 110. A user's operator guidance performed by such processing with reference to list presenting (refer to drawing 8) of integrated job management information is reflected in the printing job management section 120 and the copy job management section 110.

[0041] Thus, a user can be interlocked with list presenting of integrated job management information, can input the operator guidance of a job, and can make it reflect in a digital copier 10 and a print server 20 with this operation gestalt by having formed the job actuation input-process section 230 and the job actuation reflection processing section 240.

[0042] 4. Explain Mohd for the contention control between Mohd, next the copy job about contention control, and a print job. The system of this operation gestalt has prescribed five kinds of Mohd. Hereafter, every one they are explained.

[0043] (1) the copy job priority mode 1 -- this Mohd is Mohd who always does the priority processing of the copy job. A print job is not processed when this Mohd has. In this case, a print job is held in a print server 20, and will be in a standby condition (status "wait"). That is, in this Mohd, as shown in drawing 9 , when it judges and (S11) exists [whether a copy job exists and], printing processing of that copy job is carried out (S12), and when it does not exist, printing processing is not performed.

[0044] (2) the copy job priority mode 2 -- this Mohd is Mohd who gives priority to a copy job, only when a copy job and a print job compete. Therefore, when a digital copier 10 does not have a copy job, printing processing of the print job is carried out. In addition, in this Mohd, when a copy job is inputted while the digital copier 10 was carrying out printing processing of the print job, that copy job waits for completion of processing of that print job, and is processed. That is, in this Mohd, as shown in drawing 10 , when it judges and (S21) exists [whether a copy job exists first and], a copy job is performed (S22). And only when there is no copy job, it judges whether a print job exists (S23), and if it exists, the print job will be processed (S24).

[0045] (3) the print job priority mode 1 -- this Mohd is Mohd who always does the priority processing of the print job. A copy job is not processed when this Mohd has. In this case, a copy job is held in a digital copier 10, and will be in a standby condition. That is, in this Mohd, as shown in drawing 11 , when it judges and (S31) exists

[whether a print job exists and], printing processing of that print job is carried out (S32), and when it does not exist, printing processing is not performed.

[0046] (4) the print job priority mode 2 -- this Mohd is Mohd who gives priority to a print job, only when a copy job and a print job compete. Therefore, a copy job will be processed if a print job is lost. In addition, in this Mohd, when a print job is inputted while the digital copier 10 was carrying out printing processing of the copy job, that print job waits for completion of processing of that copy job, and is processed. That is, in this Mohd, as shown in drawing 12 , when it judges and (S41) exists [whether a print job exists first and], a print job is performed (S42). And only when there is no print job, it judges whether a copy job exists (S43), and if it exists, the print job will be processed (S44).

[0047] (5) Mohd non-giving priority -- in this Mohd, a copy job and a print job are treated on equal terms. That is, a copy job and a print job are processed in order according to the order of reception.

[0048] In this Mohd, as shown, for example in drawing 13 , it judges whether a copy job exists (S51). If it judges whether a print job exists (S52) and a print job exists when a copy job does not exist, the print job will be performed (S55). In S51, when a copy job exists, it judges whether a print job exists further (S53). Here, since it is saying that only a copy job exists when a print job does not exist, a copy job is performed (S56). When a copy job exists in S53, both a print job and a copy job will exist. In this case, it judges which should be previously received by this system between the copy job and the print job (S54). As a result of this judgment, when a print job is the point, a print job is performed (S55), and when a copy job is the point, a copy job is performed (S56). In addition, in this system, in order to realize this non-priority mode, the time of day which received that job as management information of each job is managed.

[0049] In the above, Mohd of the contention control specified in this operation gestalt was explained. This Mohd is managed by the Mohd Management Department 114 of a digital copier 10. And the processing sequence of a copy job and a print job changes by which Mohd has a digital copier 10. That is, although the copy job management section 110 manages the processing sequence of each copy job and the printing job management section 120 has managed the processing sequence of each print job, respectively, Mohd is decided, and the processing sequence in the whole job with which the copy job and the print job were doubled is begun, and is decided. Then, the integrated job management section 100 determines the status about the processing sequence of each job with reference to this Mohd's set point, when the management information of a print job and a copy job is collected. For example, since a copy job is not processed when a printing

system is in the print job priority mode 1, the status of a copy job is determined as standby "wait." Moreover, when a system is in a non-priority mode, the integrated job management section 100 determines the processing sequence of each job based on a time received. Thus, a user can know in what kind of sequence the job currently held in the present printing system will be processed by determining the status about the processing sequence in the inside of the whole job, and indicating this status by list.

[0050] In addition, Mohd can change with directions of a user. Directions of this mode change can be performed on the list display (refer to drawing 8) generated in the integrated job management section 100. That is, Mohd can be changed by choosing Mohd from the pull down menu attached to Mohd's display column 520, and carrying out the depression of the setup key 530-5. Directions of this mode change are told to the Mohd Management Department 114 of a digital copier 10 through the job actuation reflection processing section 240, and Mohd's set point held there is changed.

[0051] Moreover, it considers as the approach of controlling this Mohd dynamically, and the following approaches can be considered.

[0052] When Mohd's default is decided and a print job [between predetermined time] or copy job is not inputted the first probably, either, it is the approach of returning Mohd to the default.

[0053] The second is the approach the integrated job management section 100 changes Mohd's setup so that the job may be printed, when it is detected that the job which is in the situation that supervised change of integrated job management information in the integrated job management section 100, and the same Mohd continued is in a processing waiting state beyond predetermined time. When Mohd who processes only the job of one class continues for a long time according to this approach, it becomes possible to process the job of the class of another side which suited the processing waiting state in the meantime.

[0054] 5. Explain the example of a display of integrated job management information, next the modification of a list display of the job situation generated in the integrated job management section 100. Drawing 14 is drawing showing the modification of this display. In this example, the display item is restricted compared with the above-mentioned example (drawing 8). That is, in this example, only Type (class) of the fundamental information about the situation of a job, i.e., a job, ID (identifier), and Status (status) are displayed. Type and Status are the same items as the example of drawing 8 . ID is an identification number for distinguishing a job from other jobs, and is equivalent to a job name in the example of drawing 8 . Thus, the information on the status about the class of job, an identifier, and processing sequence is required

information when a user performs actuation about the processing sequence of a job. Thus, when displaying by limiting a display item, in intensive processing of the management information by the job information intensive section 200, only the information corresponding to the display item can be collected, and the integrated job management information which consists only of a ********** item can also be generated. Moreover, the information on all the items of management information is registered into integrated job management information, and only a display item can also be restricted to it. In addition, you may make it display the job name which the user attached instead of ID in the display of drawing 14 . Moreover, in drawing 14 , although the class of job was displayed as one (Type) of the display items, the method of a display of the class of job is not restricted to this. For example, as shown in drawing 15 , both are also distinguishable by [, such as displaying a copy job by display and usually displaying a print job in inverse video,] changing a display gestalt according to the class of job. In addition, one side can be hatching-displayed shade (shadowed) displayed among a print job and a copy job, or approaches, such as changing a foreground color by the print job and the copy job, can also be used. The display gestalt for distinguishing a print job and a copy job should just choose a suitable thing according to the function (****** [that color display and a middle gradation display are possible] etc.) of the hardware to be used.

[0055] In addition, if you compare the example of a display of drawing 14 with the example of a display of drawing 8 , since the contents of a display are more abundant in the examples of drawing 8 , it is convenient for a user. For example, since a user can know which is one's job by displaying owner, possibility of adding actuation to others' job accidentally can be reduced. Moreover, the information on size, the number of pages, and number of copies can be used in order to guess the duration which printing of each job takes. A user can guess for which with reference to such information, by the time its job is processed, it must wait the back. It becomes unnecessary therefore, for the user to wait for a printing result to come out of a printing result near the digital copier even to a digital copier 10 at the time of day guessed that what is necessary is just to go picking. Moreover, a user can judge whether the processing sequence of its job is advanced, or its job is canceled based on the guess.

[0056] Moreover, the display item about integrated job management information can also be fluctuated according to assignment of a user. Drawing 16 showed the example of a display in this case. In this example of a display, the contents carbon button 530-6 of a display for changing a display item into a viewing window 500 is displayed. If the depression of this contents carbon button 530-6 of a display is carried out, the display

option window 540 will be opened. The list of the items registered into the integrated job management information 212 is shown in this window 540. It can set up whether the item is displayed or it does not carry out by whether it checks to the check box which adjoined each item and has been arranged. The job information-display control section 220 chooses and displays only a required display item from the integrated job management information 212 according to this setup.

[0057] 6. Explain some examples of the job actuation based on presenting of integrated job management information, next the job actuation using list presenting of integrated job management information. Below, it explains using the example of a display of drawing 14 .

[0058] (1) Directions of a halt of the halt job of a job choose a job to stop with a mouse etc., and are performed by carrying out the depression of the earth switch 530-3. As for the stopped job, the status will be in a idle state. Drawing 17 is drawing showing the example of a display of integrated job management information when a halt of a job is directed. This example shows the case where the print job of ID number 33 is stopped. The mark (suspend) which shows it is displayed on the job in a idle state. The job in a idle state is passed by the consecutive job until a halt is canceled. That is, in drawing 17 , at the time of (a), although the job of ID33 has processing ranking in a idle state by the 2nd place, after processing of the job of ID31 finishes, as shown in (b), one processing ranking advances and it ranks 1st. If a idle state is canceled at this time, the job of ID33 will be processed next. However, when processing of the job of ID32 is completed and the idle state of the job of ID33 is not canceled yet, as shown in (c), the job of ID33 is maintained with the 1st place of processing ranking, and the job of following ID34 is processed previously. In addition, discharge of the idle state of a job can be performed by carrying out the depression of the restart carbon button 530-2.

[0059] (2) Deletion of the cancellation job of a job can choose a job to delete, and can be performed by carrying out the depression of the deletion carbon button 530-4. If it is made a configuration which performs an acknowledgment indicator as shown in drawing 18 , and asks a user for a check when deletion of a job is directed, cancellation of the job by the operation mistake can be prevented.

[0060] (3) Migration of the processing sequence of the migration job of the processing sequence of a job can choose a job to move sequence with a mouse etc., can push the migration carbon button 530-1, and can be performed by choosing a migration place. In addition, the job which processing sequence can move changes with Mohd of contention control.

[0061] For example, drawing 19 is drawing explaining the flow of migration of the

processing sequence of the job in the case of a non-priority mode. in the case of a non-priority mode, unless the limit is added to actuation authority namely,, the sequence of all jobs is fundamentally movable. In the example of drawing 19 , by carrying out the depression of the mouse button on Rhine of a job (namely, sequence modification) (this example ID32) to move cursor first, that job is chosen as a candidate for migration, and as shown in (a), inverse video is carried out. Next, as shown in (b), cursor is moved on the migration carbon button 530-1, and the depression of the mouse button is carried out. then, the line of the job (ID32) chosen as a candidate for migration -- for example, it is indicated by flashing (the broken line surrounded and expressed in drawing 1919), and it is specified that the job is a candidate for migration. Next, if cursor is moved, the inverse video of the line with the cursor will be carried out. And a migration place will be decided, if cursor is moved to the line (this example line of the job of ID33) of a desired migration place and the depression of the mouse button is carried out, as shown in (c). Consequently, as shown in (d), the processing sequence of the job of ID32 is changed after the job of ID33. In addition, although this example is a method which moves the processing sequence of the job for migration to the degree of the job chosen as a migration place, a method, such as replacing the sequence of the job for migration and the job of a migration place, may be used for it. Moreover, you may enable it to direct the cancellation of actuation to a job by the depression of the specific carbon button of a mouse. For example, it is the approach of directing selection of a job, and directions of actuation by the depression of the left carbon button of a mouse, and directing those cancellation by the depression of a right carbon button.

[0062] In the case of Mohd other than a non-priority mode, the selection range of the job for migration or a migration place is restricted. For example, in the case of the print job priority mode 1 and the print job priority mode 2, processing sequence of a print job cannot be moved after a copy job, and it cannot move processing sequence of a copy job before a certain print job, either (if it says strictly, migration of such processing sequence is meaningless on these Mohd's definition). There is such a limit and also the processing sequence of a job is movable with the same procedure as a non-priority mode. What is necessary is just to change Mohd, if you want to perform such migration. Having a meaning most in the case of the print job priority mode 1 and the print job priority mode 2 can also accept modification of the sequence between copy jobs, although it is modification of the sequence between print jobs. In such a case, it is suitable for a line (when moving a print job, it is the line of a copy job) unsuitable as a migration place to prevent also from choosing, even if inverse video is made not to be carried out or it clicks. moving the processing sequence of a copy job after a print job this

and reversely in the case of the copy job priority mode 1 and the copy job priority mode 2, and in addition, moving the processing sequence of a print job in front of a copy job -- it cannot **.

[0063] (4) It explained that the selection range of the job which can move processing sequence, or its migration place was restricted by Mohd of contention control for the gang control foregoing paragraph of migration of the processing sequence of a job, and a mode change. Here, the approach for mitigation of the actuation burden of the user in the case of performing accepted migration out of range is explained.

[0064] When accepted migration out of range was performed, it was already said that Mohd's modification is needed. However, it judges whether after checking that migration of a job cannot be performed, the migration for which it will ask if it changes into which Mohd is attained, and it is also considered that a series of activities of changing Mohd's set point according to this decision serve as a burden for a user. So, with this operation gestalt, when the accepted migration out of range was directed in consideration of this point, the mode change to suitable Mohd was suggested from the integrated job management section 100 to the user and comprehension of a user was obtained, the integrated job management section 100 adopted the method which carries out a mode change to suitable Mohd automatically.

[0065] Drawing 20 is drawing having shown an example of the flow of migration actuation of the job at the time of adopting this method. As first shown in (a), suppose that the user chose the print job (ID32) as the candidate for migration in the print job priority mode 1 (namely, Mohd who does not process any copy job). And in this case, a user pushes a migration carbon button, as shown in (b), and he presupposes that the copy job (ID23) was further chosen as a migration place. Such migration processing is not accepted in the print job priority mode 1. Then, the integrated job management section 100 chooses a non-priority mode as Mohd in whom such migration processing is possible, and as shown in (c), it displays the window 550 for asking whether Mohd may be changed into a non-priority mode from the print priority mode 1. If a user does the depression of the carbon button of Yes to the inquiry on this window 550, as shown in (d), Mohd will be changed into a non-priority mode and the processing sequence of the print job of ID32 will be changed after the copy job of ID23. In addition, when a user answers that it is No to the inquiry on a window 550, directions of migration actuation are canceled.

[0066] (5) If actuation of a security job is accepted without any restriction, a job may be deleted without comprehension of the owner of the job by others, or processing sequence of a job may be freely changed by others. Moreover, if Mohd of contention control is

changed so that often [one's convenience of one user] when two or more users' job exists in a printing system, the case where other users are troubled can be considered. In order to solve such a problem, it is possible to restrict the range of the actuation a user can do it.

[0067] Specifically, there is a method of classifying a user into two kinds such as a general user and privileged users, such as a system administrator. In this case, deletion of their job or a halt, moving down of the sequence of their job, etc. permit a general user only actuation of the range which does not require trouble for other users, and actuation of a job and all actuation including Mohd's modification are accepted in a privileged user. in addition, him, each user,, for a check, the password is beforehand set up for every user, and when operator guidance is performed, the input of a password may be required of a user from a system side.

[0068] In the above, the suitable operation gestalt of this invention was explained. The operation gestalt explained above was the configuration of having formed the integrated job management section 100 in both the digital copier 10 and the print server 20. However, not only this but when forming the integrated job management section 100 in either a digital copier 10 and the print server 20, it is contained in the range of this invention. Even in such a case, the effectiveness that a user can grasp the situation of a copy job and a print job at a glance is acquired.

[0069] Moreover, a digital copier 10 is connected to a direct network, and this invention can be applied also to network configuration which communicates with a print server 20 through a network.

[0070] Moreover, the function of the integrated job management section may be mounted in one of the computers connected to the network instead of preparing the integrated job management section in both or one side of a digital copier 10 and a print server 20. An example of such a system configuration is shown in drawing 21 . That is, in drawing 21 , the job management computer 50 by which the integrated job management section 52 was mounted is connected to the network 30 where the digital copier 10 and the print server 20 were connected. The integrated job management section 52 should just have same configuration and function as the above-mentioned integrated job management section 100. In this case, the integrated job management section 52 makes the actuation which the user inputted on the job management computer 50 reflect in the management information of the copy job management section 110 and the printing job management section 120 while it communicates with a digital copier 10 and a print server 20 through a network 30 and collects each management information from the copy job management section 110 and the printing job

management section 120. In addition, in order to realize this configuration, the interface for the exchange of the information on the integrated job management section 52 is prepared in the copy job management section 110 and the printing job management section 120.

[0071] Moreover, reception of presenting of integrated job management information and the actuation to a job can also be enabled with client equipment. What is necessary is for that, to establish the client communications department 130 in a print server 20, and just to form the job actuation UI 42 in client equipment 40, as shown in drawing 22 . The client communications department 130 has the function to transmit the integrated job management information held at the integrated job management section 100 to client equipment 40, and the function to receive the operator guidance from client equipment 40, and to tell the operator guidance to the integrated job management section 100. Based on the integrated job management information received from the print server 20, the job actuation UI 42 generates the list display of a job, and sends the operator guidance from a user inputted based on the list display to a print server 20.

[0072] Moreover, the above-mentioned operation gestalt showed the example of a display using a window system as a list display of a job. So, below, the example of a display in case the indicating equipment prepared in the print server or the digital copier is equipment in which window displays, such as character display, are impossible is explained. Drawing 23 is drawing showing the example of a display in such a case. In the example of drawing 23 , Command A is a command which requires presenting of integrated job management information first. A user's input of this command displays the integrated job management information B. Command C is a command which moves the job of ID32 behind the job of ID33. After this command is inputted, when the command of presenting of integrated job management information is inputted, it turns out that the processing sequence of a job is changed. Command D is a command which asks for the display of the set point of Mohd of contention control. Mohd's set point E is displayed according to this command. Command F is a command for directing a halt of the job of ID32. And Command G is a command for directing deletion of the job of ID32. Thus, also in the equipment using character display, the technique of this operation gestalt is applicable.

[0073] In addition, the configuration of this operation gestalt explained above is realizable by performing the program which described each function of the above-mentioned integrated job management section 100 by the computer system. A user is provided with this program in the form written in the record medium which can computer read CD-ROM (compact disk-read only memory), a floppy disk, etc. For

example, if a user makes CD-ROM drive 310 of a computer 300 read CD-ROM350 in which the above-mentioned program was written as shown in drawing 24 , the program is installed in a hard disk drive unit 320, and will be in the condition which can be performed. The function of the above-mentioned operation gestalt is realized by this program's being loaded by control of an operating system etc. on main memory 340, and performing it by the processor 330. In addition, a digital copier 10 and a print server 20 are also contained in the computer 300 here.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is drawing showing the whole system configuration of an operation gestalt.

[Drawing 2] It is drawing showing the detailed configuration of the control section of a digital copier.

[Drawing 3] It is drawing showing an example of copy job management information.

[Drawing 4] It is drawing showing the detailed configuration of the control section of a print server.

[Drawing 5] It is drawing showing an example of printing job management information.

[Drawing 6] It is drawing showing the detailed configuration of the integrated job management section.

[Drawing 7] It is drawing showing an example of integrated job management information.

[Drawing 8] It is drawing showing the example of a list display of the job situation by the job information-display section.

[Drawing 9] It is the flow chart which shows the flow of the job contention control in the copy job priority mode 1.

[Drawing 10] It is the flow chart which shows the flow of the job contention control in the copy job priority mode 2.

[Drawing 11] It is the flow chart which shows the flow of the job contention control in the print job priority mode 1.

[Drawing 12] It is the flow chart which shows the flow of the job contention control in the print job priority mode 2.

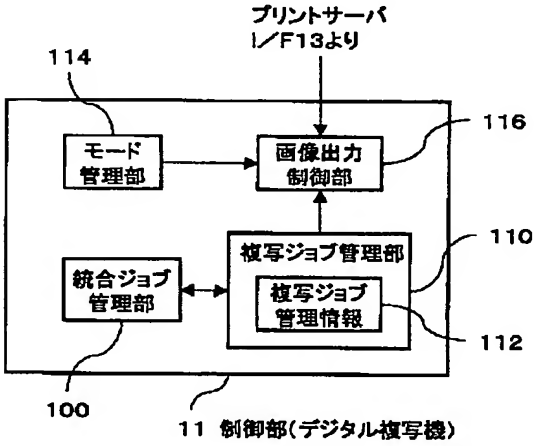
[Drawing 13] It is the flow chart which shows the flow of the job contention control in a non-priority mode.

[Drawing 14] It is drawing showing another example of a list display of a job situation.

[Drawing 15] It is drawing showing another example of a list display of a job situation.
[Drawing 16] It is drawing showing another example of a list display of a job situation.
[Drawing 17] It is drawing for explaining the idle state of a job.
[Drawing 18] It is drawing showing an example of the acknowledgment indicator of deletion of a job.
[Drawing 19] It is drawing for explaining the procedure of migration of the processing sequence of a job.
[Drawing 20] It is drawing for explaining the mode change processing interlocked with migration of the processing sequence of a job.
[Drawing 21] It is drawing showing the example of a system configuration which mounted the integrated job management section in the computer which is not a digital copier or a print server, either.
[Drawing 22] It is drawing showing the example of a system configuration for performing list display of a job situation, and actuation of a job on client equipment 40.
[Drawing 23] It is drawing showing the example of a list display of the job situation in character display.
[Drawing 24] It is drawing showing the configuration of the computer by which an operation gestalt is mounted.
[Drawing 25] It is drawing showing the example of the printing structure of a system using the digital copier as a printing means.
[Description of Notations]
10 11 Digital Copier, 21 12 Control Section, 22 UI (User Interface), 12a, 22a A display, 12b, 22b The actuation input section, 13 print-server I/F, 14 IIT, 15 IPS, 16 17 IOT, 24 Storage, 20 A print server, 23 Client I/F, 25 Image-processing section, 26 Copying machine I/F, 30 A network, 40 Client equipment, 100 The integrated job management section, 110 The copy job management section, 112 Copy job management information, 114 The mode Management Department, 116 The image output-control section, 120 Printing job management section, 122 Printing job management information and 200 The job information intensive section, 210 The management information storage section, 212 Integrated job management information and 214 Mode setting information, a 220 job information-display control section, 230 The job actuation input-process section, 240 Job actuation reflection processing section.

DRAWINGS

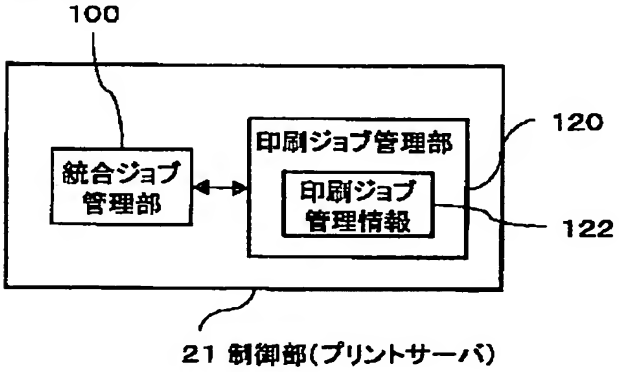
[Drawing 2]



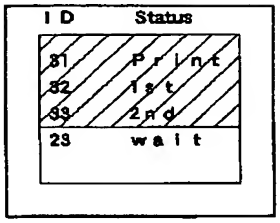
[Drawing 3]

ジョブ名	ステータス	オーナー	サイズ	頁数	部数
copy23	wait	yama	123k	5	20

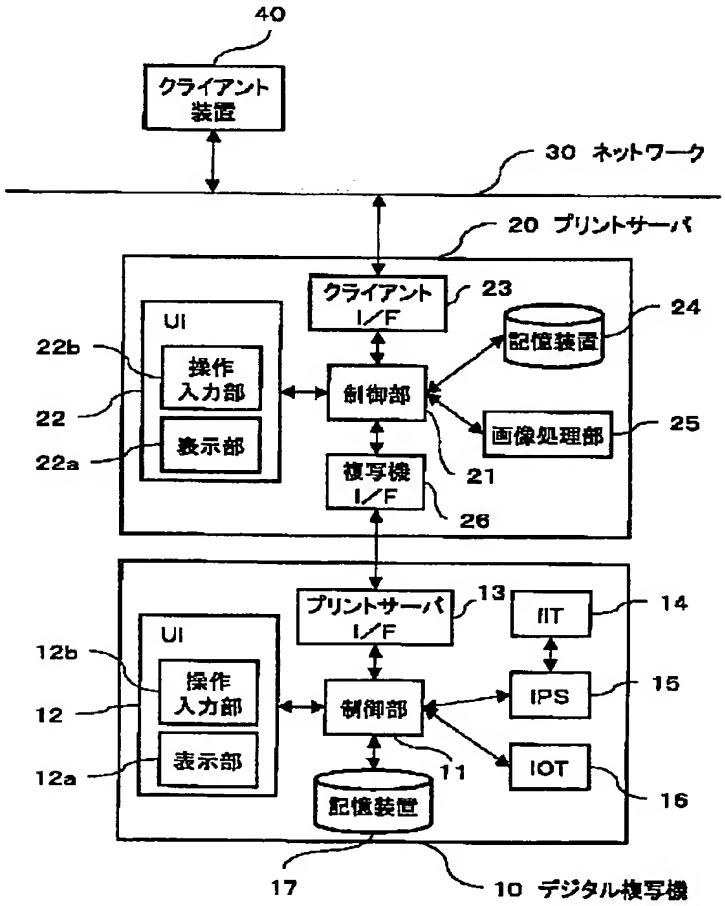
[Drawing 4]



[Drawing 15]



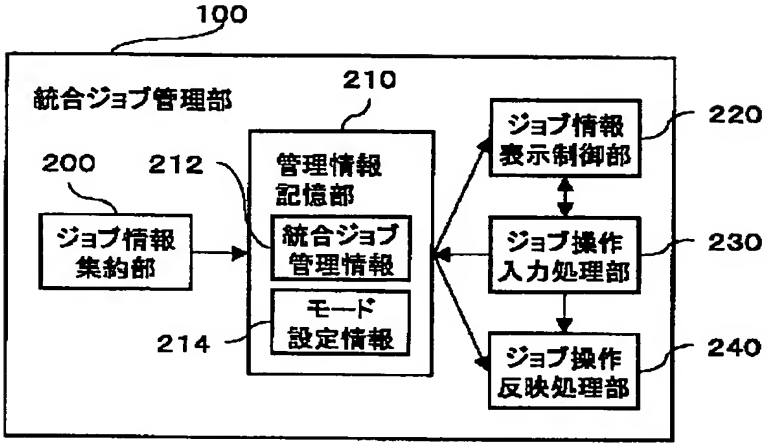
[Drawing 1]



[Drawing 5]

ジョブ名	ステータス	オーナー	サイズ	頁数	部数
特許明細書	print	abe	255k	12	2
WeeklyReport	1st	abe	98k	1	1
システム図	2nd	abe	23k	1	1

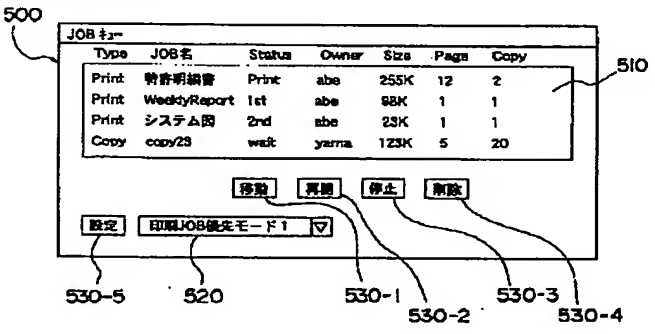
[Drawing 6]



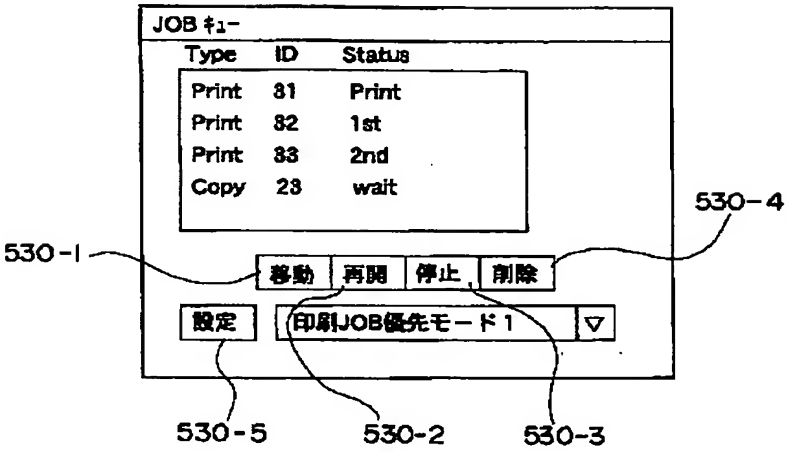
[Drawing 7]

種類	ジョブ名	ステータス	オーナー	サイズ	頁数	部数
print	特許明細書	print	abe	255k	12	2
print	WeeklyReport	1st	abe	98k	1	1
print	システム図	2nd	abe	23k	1	1
copy	copy23	wait	yama	123k	5	20

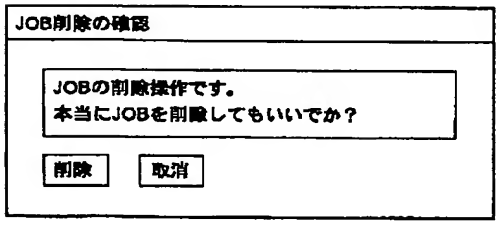
[Drawing 8]



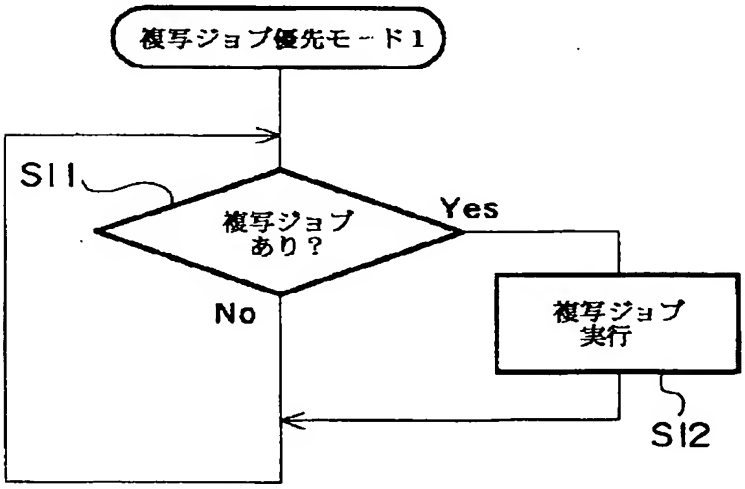
[Drawing 14]



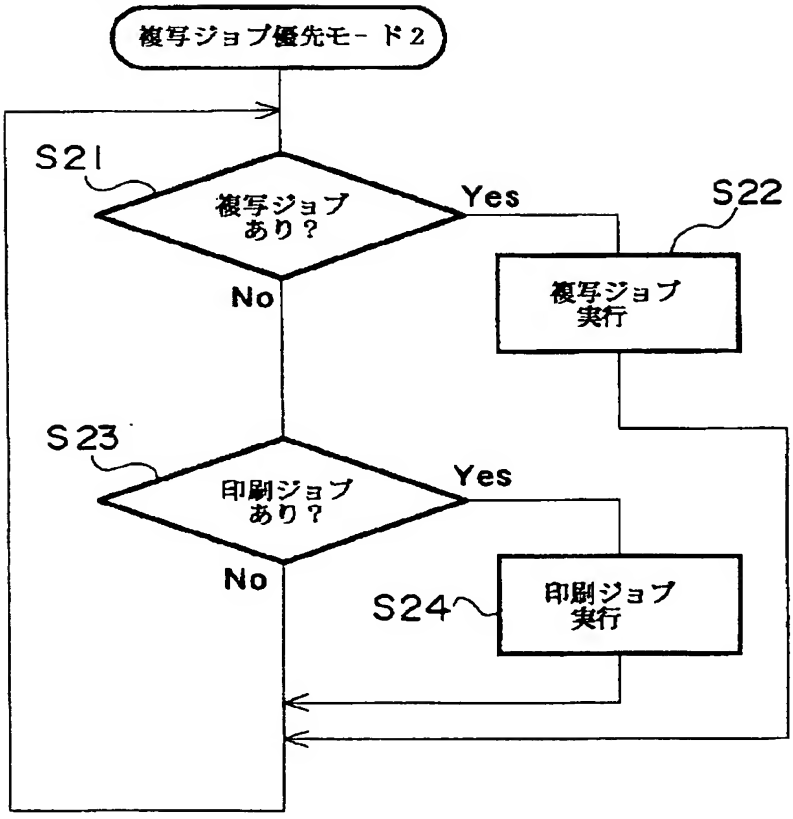
[Drawing 18]



[Drawing 9]



[Drawing 10]


複写ジョブ優先モード2
S21
複写ジョブ
あり？
Yes
S22
No
複写ジョブ
実行
S23
印刷ジョブ
あり？
Yes
No
S24
印刷ジョブ
実行

[Drawing 17]

(a)

Type	ID	Status
Print	31	Print
Print	32	1st
Print	33	2nd(suspend)
Print	34	3rd
Copy	23	wait

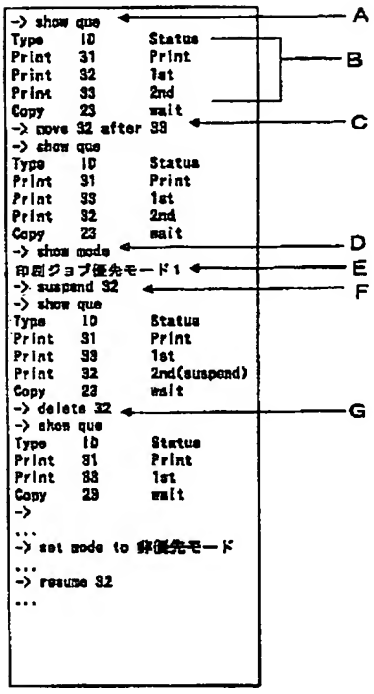
(b)

Type	ID	Status
Print	32	Print
Print	33	1st(suspend)
Print	34	2nd
Copy	23	wait

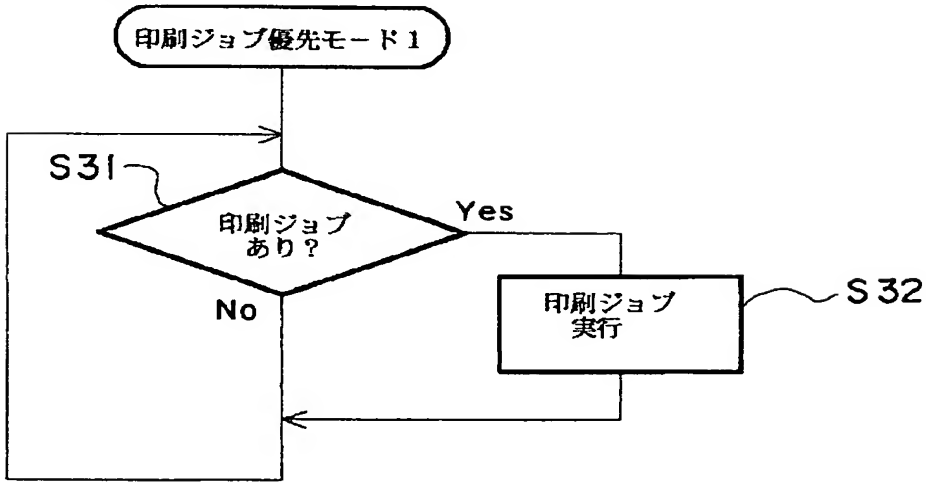
(c)

Type	ID	Status
Print	34	Print
Print	33	1st(suspend)
Copy	23	wait

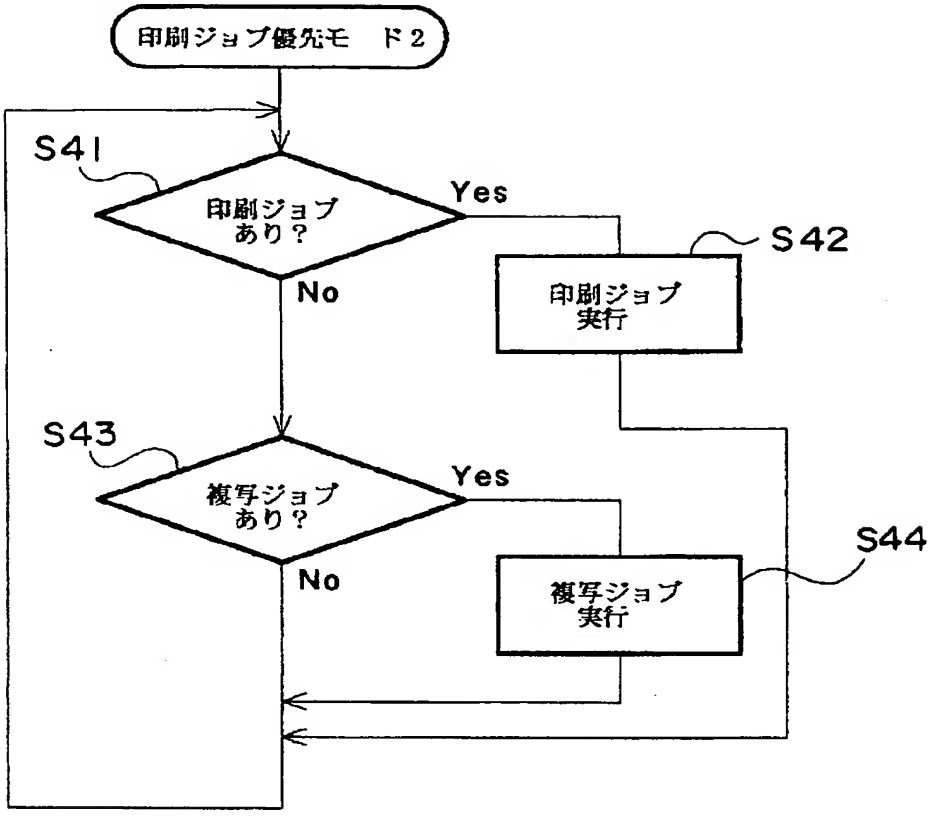
[Drawing 23]



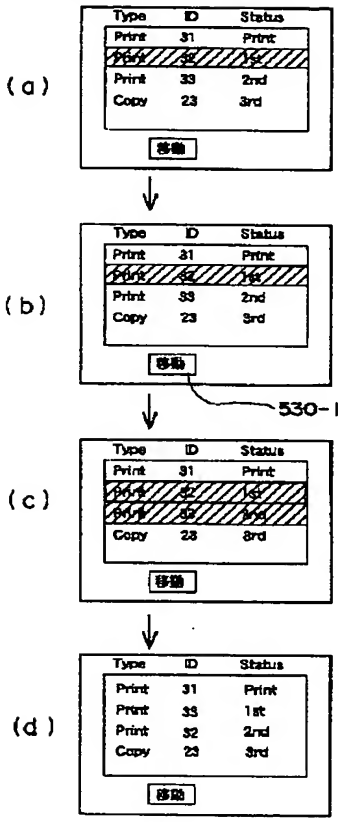
[Drawing 11]



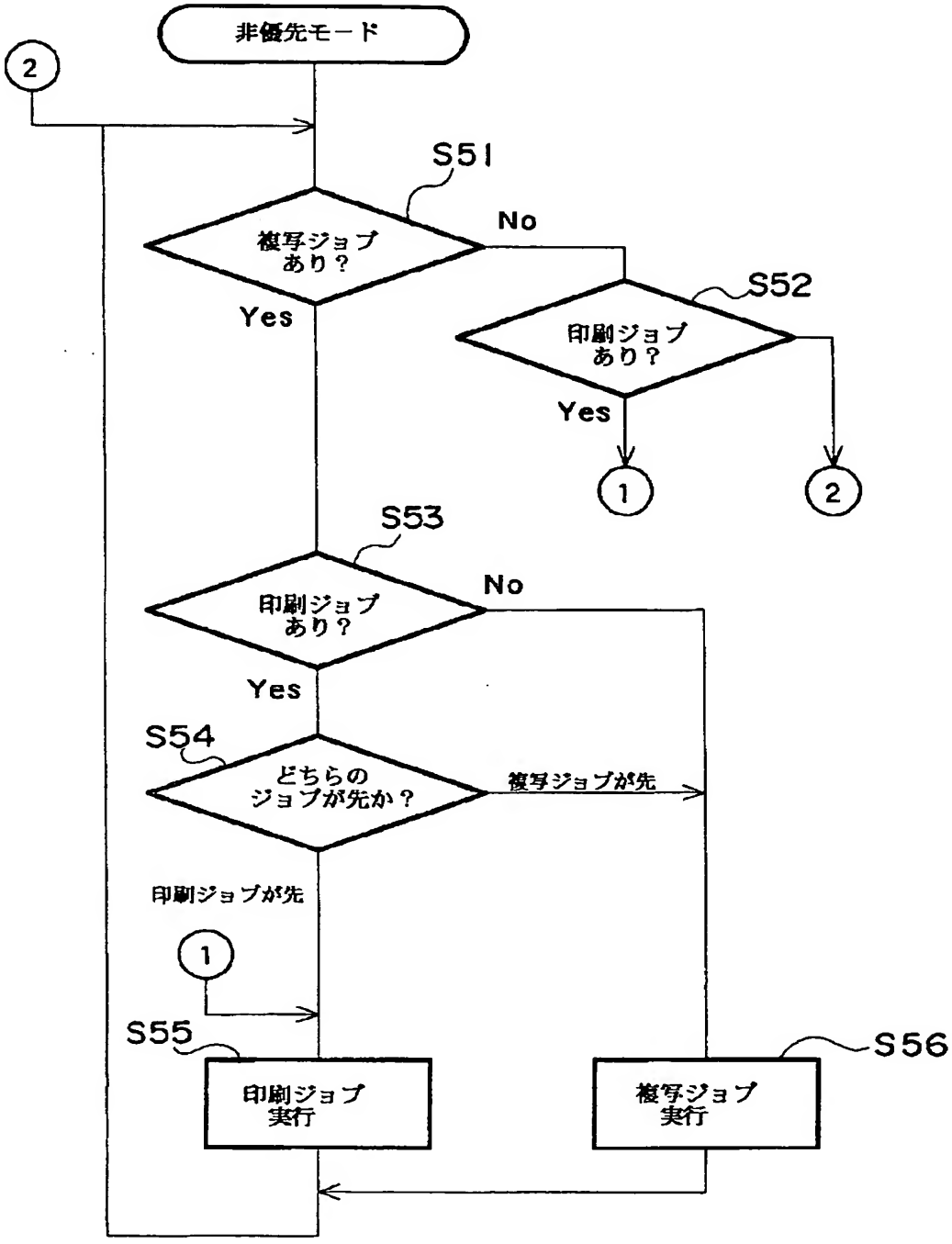
[Drawing 12]


印刷ジョブ優先モード2
S41
印刷ジョブ
あり？
Yes
No
S42
印刷ジョブ
実行
S43
複写ジョブ
あり？
Yes
No
S44
複写ジョブ
実行

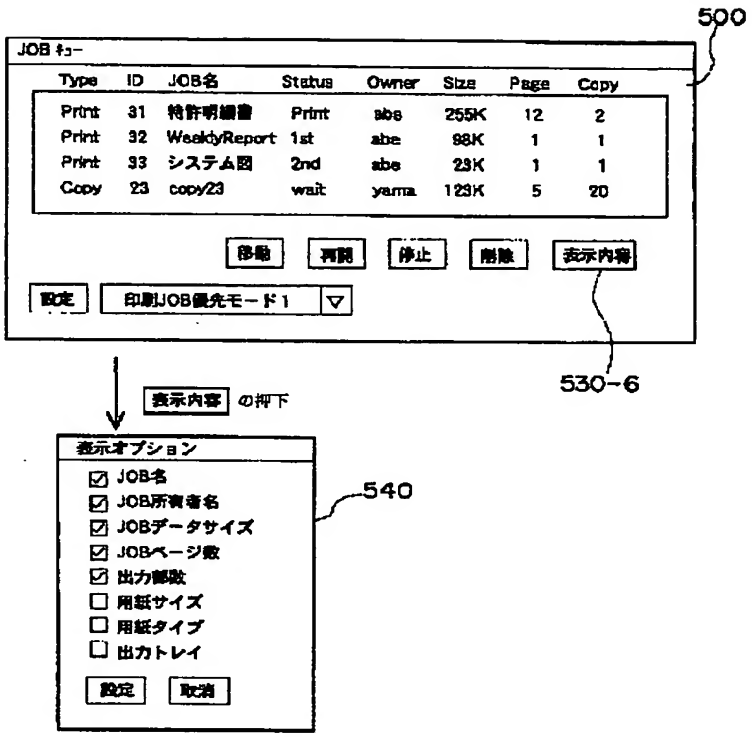
[Drawing 19]


(a)
Type ID Status
Print 31 Print
Print 33 2nd
Copy 23 3rd
(b)
Type ID Status
Print 31 Print
Print 33 2nd
Copy 23 3rd
530-1
(c)
Type ID Status
Print 31 Print
Copy 23 3rd
(d)
Type ID Status
Print 31 Print
Print 33 1st
Print 32 2nd
Copy 23 3rd

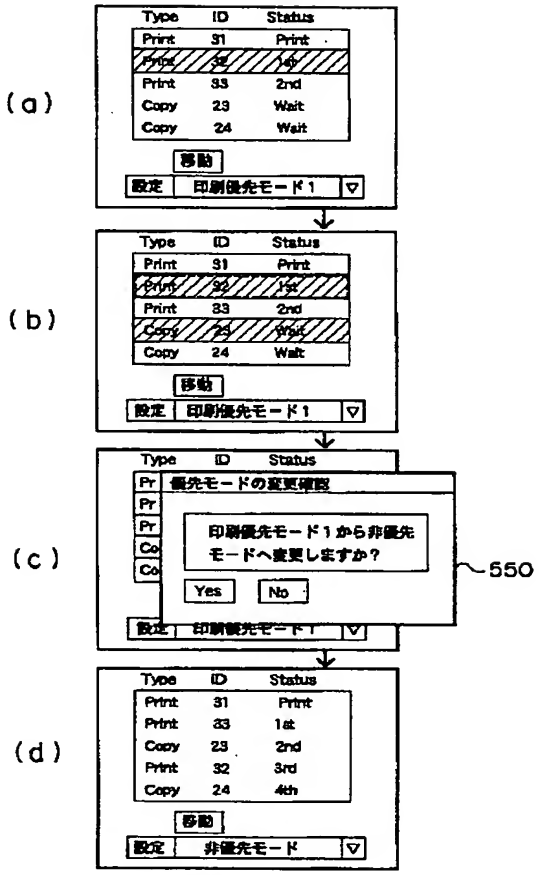
[Drawing 13]


非優先モード
2
S51
複写ジョブ
あり？
No
Yes
S52
印刷ジョブ
あり？
Yes
1
2
S53
印刷ジョブ
あり？
No
Yes
S54
どちらの
ジョブが先か？
複写ジョブが先
印刷ジョブが先
1
S55
印刷ジョブ
実行
S56
複写ジョブ
実行

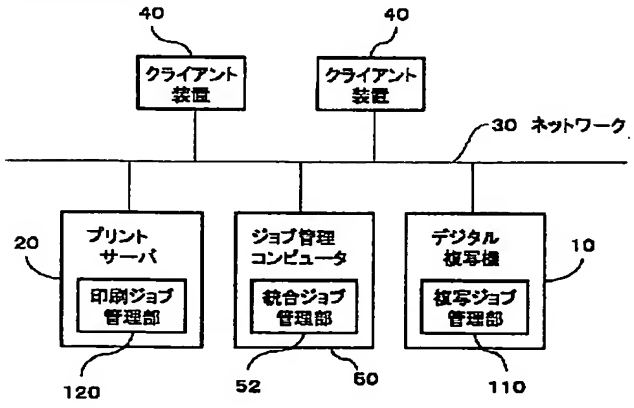
[Drawing 16]


500
JOB キュー
Type ID JOB名 Status Owner Size Page Copy
Print 31 特許明細書 Print abe 255K 12 2
Print 32 WeeklyReport 1st abe 98K 1 1
Print 33 システム図 2nd abe 23K 1 1
Copy 23 copy23 wait yama 123K 5 20
移動
再開
停止
削除
表示内容
設定
印刷JOB優先モード1
530-6
表示内容 の押下
表示オプション
JOB名
JOB所有者名
JOBデータサイズ
JOBページ数
出力部数
用紙サイズ
用紙タイプ
出力トレイ
設定
取消
540

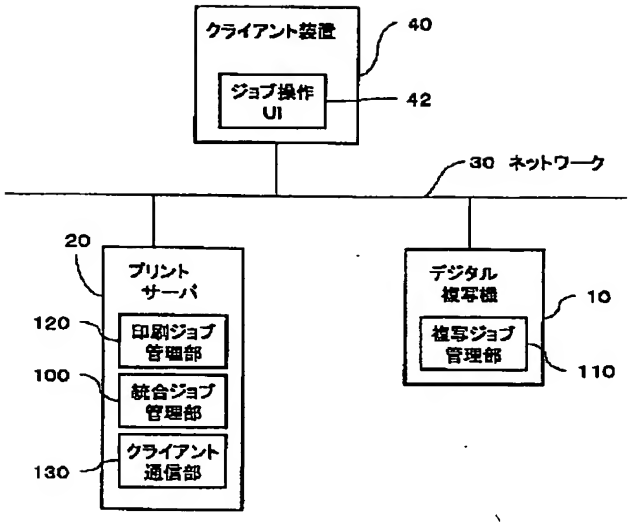
[Drawing 20]



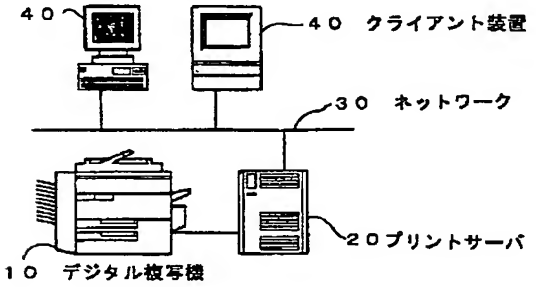
[Drawing 21]



[Drawing 22]



[Drawing 25]



[Drawing 24]